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THE HUMIST DOCTRINE OF CAUSATION.

IN metaphysics every age seems to have its pet absurdity, which subsequent ages come to regard with mingled wonder and amusement. We can laugh at the mediaeval fancy of *substantiae secundae*, or at the Leibnitzian doctrine that if two things, say two drops of water, were so like each other that you could not tell the difference between them, they were not really two at all but only one. It is certain, however, that a succeeding age will laugh just as heartily at the doctrine, widely accepted in our age, that all the things which are for us the very type of reality, on which the very conception of reality itself is modelled, are not themselves real. While natural science makes a steady progress, it seems to be a law in the history of distinctively philosophical speculation that the paradoxes of one age become the orthodoxy of the next, to be looked on in turn by the next again, not only as paradoxes, but as absurdities. The reason of the difference between the two lies in this, that nothing has as yet been generally recognized as bearing in regard to the theories of the subject sciences the same relation that the test of comparison with fact bears to the theories of physics. I have endeavored[1] elsewhere to shew what it is that, as it seems to me, ought to be held to bear that relation to them; that any theory which does violence to the natural use of language may as well be rejected summarily and at once. If it is not, at any rate the Time Spirit will

[1] "Reality and Causation," *Mind*, N.S., vol. IV, no. 13.

assuredly see to it that it is rejected later on. The nearest approach that we can have to the test of fact in metaphysics, is the trial of every general statement by its application to some concrete individual instance. The great name of Kant can no more sanctify the absurdity that the continual citation of test instances is undesirable in philosophy, than the great name of Plato can sanctify the parallel absurdity that the study of individual facts will never lead to the true advancement of knowledge in physics.

Another world-famous paradox that has emanated from the same source as the idealist riddle, is the doctrine with regard to causation, now extensively accepted, that causation consists in nothing else than the constant conjunction of events. The fate of this doctrine has been, in some respects, very different from that of idealism. While idealism is neglected by the scientific world, as something with which it has no concern, something about which the metaphysicians may spin what cobwebs they please, but which the man of science will leave carefully alone, the reduction of causation to mere conjunction, which springs from the same root, and rests on the same grounds with it, has been taken up warmly by natural philosophers, in England at any rate; and has been proclaimed as the true and only doctrine, with a dogmatic confidence very different from the modest recognition of its paradoxical character with which its author introduced it.

The invariable conjunction of two facts is, we are told, the full content of the conception of causation. Not only is the connection of cause and effect nothing else but such invariable conjunction, but the very notion of it contains, in the last analysis, they say, nothing else but the thought of such invariable conjunction. If that were so, however, the question must surely arise at the very outset: How is it that scientific investigation consists in using the fact of the invariable conjunction between events in order to prove their causal connection? Do we use their invariable conjunction merely to prove their invariable conjunction? If that is all that we are doing, we might as well save ourselves the trouble. The fact of the

one being used to prove the other is, however, sufficient evidence that they are not the same. The question must also surely arise: How is it that, if the meaning of cause and effect is nothing but constant conjunction, we can use the words 'cause' and 'effect' intelligently long before we know anything about constant conjunctions? If a child is asked why he is crying, and answers that it is because his brother struck him, can anything be more absurd than to imagine that what is running in his mind is the constant conjunction between blows and tears: a conjunction which, as constant, does not exist; and which he could know nothing about, if it did. We may take it as perfectly certain, *pace* Hume and Mill, that 'cause' does mean for us something more than constant conjunction, and the interesting fact to get at is, what that is in which this added meaning consists.

Let us suppose that the rotundity of the earth were still undiscovered, but that it had been observed by navigators that, in whatever part of the world they were, when they met an approaching vessel, the tops of the masts appeared first, and the hull last; and that the converse happened when the vessel receded. We should then have a conjunction of the most rigid invariability, and we should probably in these circumstances find some Greek word that would express the idea 'uppermost part first appearing,' or the converse, and would call what that word expressed, provisionally, the cause of the phenomenon. This would be analogous to our calling the weight of bodies the cause of their falling, while it is really nothing more than an expression for the fact that, when left unsupported, they always do fall. When, however, we subsequently discovered that the earth was a sphere, we should then feel that we now, for the first time, understood the reason of the observed uniformity; that we were at last in possession of the true cause. We have, then, in such a case as this, the distinction given us between the true cause and the invariable conjunction which, for want of any other cause, we often treat as a cause, though quite conscious that we are not using language altogether literally in doing so; and it must strike any one at a

glance that there is between the two, between the subordinate law and the true cause, the relation that there is between the glimpse of a part and the perception of the whole.

Mill is so full of the conception of Induction as something that leads to wider generalizations, and wider generalizations only, that, when he comes across an induction that leads to the discovery of the cause itself, he does not know what to make of it. When Kepler discovered that the orbit of Mars was an ellipse, he discovered the cause of its successive apparent positions. Mill is of opinion that Kepler's process of thought in arriving at his great discovery is not to be reckoned as reasoning at all, but as some operation subsidiary to it.[1] He further thinks, that such a conclusion differs from an induction like Gravitation in that, while the latter must be true or false, it is a matter of indifference whether the former is a truth in itself or not, so long as it serves as a kind of mnemonic rhyme to hold the facts together.[2] Surely, however, it is quite beyond question that the two discoveries stand on precisely the same footing in this respect. Both must explain the facts and both must be either true or false in themselves.

Have we, then, in the conception of whole and part, and the relation between the two, something that will give us a clue to the relation between cause and effect? Before answering that question, let us glance at some other instances of causation. The instances that Hume cites are uniformly such instances as the connection between flame and heat, or between cold and ice, that is to say, between the sensations which an outward object gives rise to for one of our senses and those which it gives rise to for another. They are, it is true, instances of a causal connection, but they are surely not the only ones nor the most obvious ones. Why pass over such clearer and more familiar instances as the moving of a book, or the filling of a glass, or the doing of any of the innumerable acts of daily life that we express by means of a transitive verb followed by an

[1] Mill's *Logic*, 3d ed., bk. III, ch. II, "Of Induction Improperly so Called," § 3, p. 301.

[2] *Ibid.*, § 4, pp. 308 ff.

accusative case; or why, again, pass over such other more obvious instances as the connection between the foot and the track, or between last night's rain and the pools of water in the streets to-day? There seems to be some principle in human nature which tends to make us overlook the obvious and familiar in favor of the unusual and remote. It has even, as we know, led some primitive races to overlook the part which the mother sustains in childbearing, and to put her husband to bed when there is an addition to the family.

If any one without a theory to support were asked what meaning he attached to the word 'cause,' he would be very likely to answer 'that which does something.' There is a shade of difference in meaning, however, between 'doing' and 'causing,' which is not to be neglected. The two words are naturally and continually applied to the selfsame fact, but in different circumstances, and from a different point of view. I move your ink-bottle while you are out of the room. That, from my point of view, is simply 'doing something.' You come back, and find it moved. On enquiry you ascertain that my moving it was the 'cause' of its change of place. The expression 'doing something' implies that the fact as a whole is regarded in itself, while the conception of 'cause' imports that there was a gap to be filled up; that your first knowledge of it was fragmentary, but that now you can fill up the missing links. We are thus brought back to the conception, that the knowledge of the fact and its cause together is the knowledge of it as a whole, while the knowledge of the effect alone is the knowledge of a fragment only.

The problem of causation is often stated somewhat in this way: "Granted that we always conclude that everything that begins to exist must have a cause, what makes us do so? Is the belief intuitive, or is it a generalization from experience?" It seems to me, however, that what is here taken for granted, itself requires examination. In what sense is it true, or is it true at all, that we at once conclude that whatever begins to exist must have a cause? If by 'we' is meant the whole human race, it certainly is not true. Children and uneducated

people generally accept most of the facts of life and nature as they find them, and never think of enquiring as to their cause. Savages ordinarily regard such enquiries as why the sun rises and sets, or even whether it is the same sun that rises to-day as that which set yesterday, as entirely meaningless and nonsensical.[1] Yet there are some events which raise the thought of causation as quickly and as unfailingly in the mind of the savage as in the mind of the philosopher. A footprint on the sand would have made Friday, as certainly as Crusoe, conclude that it did not come there uncaused. If we enquire what such events are, as distinguished from other events, we will find that they are events which, by their very presentation, make manifest to him who observes them, their fragmentary character. Any child will recognize that a face which looks at him over a wall, or a hand which is stretched from behind a screen, are not self-subsistent things, but parts of some wider unity. When he sees the body they belong to, he is completely satisfied; he thinks he has the full cause before him. As knowledge advances, however, we come to learn that many of the things which we at first regarded as self-subsistent wholes are, in another sense, parts of some wider whole. We seek always to reconstruct the whole from what we know of its parts; and thus our goal, the ultimate cause of all that we perceive and know, continually recedes before us.

It must be observed, however, that our recognition of the fact that what we at first thought of as wholes are fragments of a wider unity, does not prevent us from continuing to distinguish between such wholes and the things that, relatively to them, are fragments. If any one could shew how, at a glance, we distinguish between a whole and a fragment, and how it is that the fragment often gives us a clue that enables us to reconstruct the whole, he would have gone far to solve the problem of causation. Wholes and fragments are infinitely various in kind. The first unity, on the model of which we frame all other unities, is the object that can be held in the

[1] Cp. Lubbock, *Origin of Civilization*, p. 251; also Park's *Travels*, vol. I, p. 265.

hand, characterized by homogeneity of substance. If it were not so characterized, and if there were no unity of purpose discernible in it, we should not think of it as one thing, but as two things conjoined. The parts of solid wholes of this sort, if broken, continue to fit each other; and this fact gives us the rudimentary conception of fitness, which plays such an important part afterwards in causation. Wholeness or unity, however, may consist, not in homogeneity of substance, but in regularity of form. If the form is such as that of the circle, the smallest part of the arc may enable us to reconstruct the whole. It may consist also in nothing but the unity of purpose manifested in a complex object such as a house or a bridge, and then it is only by suggesting the purpose of the whole, that the fragment can assist us. Besides the unity of the 'thing,' and even in a manner before it, there is the primitive unity of the 'fact,' that is, of the total of presentation at any moment. Caesar's assassination, for instance, is such a unity. The Senate House with the assembled Senate, the Dictator himself, the conspirators with their daggers, all for a moment form part of one whole; all, when they separate, still bear traces of having been fragments of it. To the widely pervasive fact that they do so, we owe it that it is often possible to trace out causes from their effects alone. As in the broken solid the parts continue to fit each other, so in the broken fact we have a parallel phenomenon. The foot continues to fit the track that it has made; the wound, perhaps, the instrument that caused it. In the case cited, the fact was one witnessed by many persons, and capable of being reconstituted for others by their narration of its circumstances. In many other such cases, however, there is no witness of such a fact, and it often becomes our task to endeavor to reconstitute it, as best we can, from the fragments in our possession.

Mill's Inductive Methods are supposed to be applicable to reasonings of every sort, whether scientific or practical. As a matter of fact, almost all his examples are drawn either from chemistry, or from those branches of physics in which the causation is, in his appropriate phrase, heteropathic, that is to

say, in which the change that takes place is a metamorphosis. If any one were to attempt to apply them to the explanation of the mental process that we use in piecing together circumstantial evidence, so as to bring home to the murderer (let us say) the guilt of his crime, he certainly would not know where to begin. The methods all take it for granted that the fact to be enquired into is repeatable, that you can have "two or more instances of the phenomenon" as a datum to begin with. You can have, of course, as many instances as you please of oxygen and hydrogen combining to form water, but you cannot have more than one instance of an individual murder. You cannot put the murderer and his victim together, and see whether he will kill him over again. The methods also take it for granted that you have, to begin with, two parts of the series that constitute a fact, say the administration of arsenic and the resulting death; and that the enquirer wants only to know how to fill up the missing links; but, in innumerable causal enquiries, we have not as our datum two parts of the series, but only one, — only, for instance, the footprint on the sand; and on the manner in which, from one such fact, we proceed to infer its cause, it is forever impossible that methods which postulate the conjunction of two things as their datum can throw any light whatever.

In spite indeed of their great, though mainly insular, success, it is quite certain that, even in regard to the branches of investigation to which they are more directly applicable, the celebrated methods have never been of the smallest use to any scientific investigator. The trouble is how to apply them. Mill sets them forth as if they were various instruments, one of which might be used in the investigation of one class of facts, and another in the investigation of another class. When we come to examples, however, we find that any conceivable judgment is an example into which the use of at least four out of the five methods enter, and generally the fifth also; and that it is a mere matter of the point of view, which method we are to regard it as exemplifying. He says, for example, 'Dogs bark' is an instance of the Method of Agreement, because it

means 'This dog, that dog, and the other dog bark'; while 'Fire burns' is an instance of the Method of Difference, because what is compared is the state of things before fire was introduced on the scene and after it.[1] But in 'Dogs bark' the state of things before they bark and after it, is also compared; and in 'Fire burns' our use of the words 'fire' and 'burns' implies general conceptions constituted by the perception of similarity between the present and other instances of fire, and the present and other instances of burning. The two examples are thus obviously examples of both methods at once, while the fact that they are so means that they are examples also of the method which he calls the Joint Method of Agreement and Difference. That all possible instances must be instances of all these methods, follows from the obvious and well worn truth, that we can make no affirmation with regard to any subject without making a corresponding negation. The statements that dogs bark and that fire burns, imply that dogs begin to bark, and that it begins to burn, and consequently that dogs were not barking, nor was it burning, before these processes respectively began.

There is thus no possibility of marking off any conceivable instance, as more properly falling under the head of an example of one of these methods rather than of any other. The Method of Difference is treated throughout as that which, where applicable, is a decisive criterion of truth, as compared with the Method of Agreement, to which it is said that a large amount of uncertainty attaches. This, however, is purely arbitrary, and depends entirely upon the point of view. In some of Mill's own examples we find, on the contrary, that the Method of Agreement is appealed to, to confirm the information given by the Method of Difference. A bird, he instances, is taken from a cage and plunged in carbonic acid gas. It dies. That is an application of the Method of Difference.[2] The fact of its dying at once, it is contended, is sufficient proof that immersion in the gas was the cause of suffocation;

[1] *Logic*, 3d ed., vol. I, p. 439, footnote.
[2] *Ibid.*, p. 399.

"at all events," he goes on to say, "after one or two repetitions," that is to say, after the Method of Difference has been supplemented by the Method of Agreement. In the example of the discovery of the cause of dew, he cites the case of the thermometer always registering a lower temperature when placed close to the bedewed object than when at some little distance from it, as an instance of the Method of Agreement.[1] We can regard it as such, if we put the emphasis on the word 'always' or some equivalent word. If we emphasize, on the contrary, the word 'lower,' it becomes an instance of the Method of Difference. Such a proof, at any rate, is as satisfactory a proof of the fact to be established as could be wished for; and has none of the uncertainty of the so-called Method of Agreement. The use of the adjective in the comparative degree is surely of itself enough to make it clear to the obtusest intellect, that it is an instance of the Method of Difference as well as of the Method of Agreement. It is, of course, an instance of the Joint Method also. If you use one thermometer and note the fall of the mercury, then it would come more properly under his conception of the Method of Difference. If you use two, and notice what they register respectively, then it would be more properly an instance of the Joint Method. There is clearly no genuine underlying principle of classification, in the distinctions between the various methods, which it is possible to follow out into individual instances. The charging of a Leyden jar is given as an instance of the Method of Agreement,[2] and the discharging as an example of the Method of Difference,[3] but plainly such an example could be turned topsy-turvy without in any way damaging it. Of the law of refracted rays he says, that it "was ascertained by direct measurement, and therefore by the Method of Agreement."[4] The Method of Agreement may evidently mean anything, from the vaguest analogy to the most absolute verification of a theory by comparison with fact. Of what value, then, can its formula be, or what possibility can there be

[1] *Logic*, 3d ed., vol. I, p. 426.
[2] *Ibid.*, p. 422.
[3] *Ibid.*, p. 423.
[4] *Ibid.*, p. 440, footnote.

of applying it? According to its formula, we have to find two instances of a phenomenon which have only one circumstance in common. If we can find them, we may conclude that they are causally connected. No doubt we may; but such instances are never to be found; they do not exist. The formula, instead of being the formula of the preliminary imperfect method that he represents it as being, is the formula of the ideal of scientific investigation, always striven after, but never altogether attained.[1]

The Method of Difference, too, plainly means one thing in one place, and another thing altogether in another place. Often, indeed ordinarily, it means absolute ocular demonstration of a fact, where, according to the current conception of inference, there is no room left for inference at all; and, for a writer who makes such fine-drawn distinctions between inference and observation that he must place Kepler's law in the latter category, it seems a strange confusion of thought thus to apply it. In reference to the proof of the first law of motion, Mill says the Method of Concomitant Variations had to be used, because "friction, the resistance of the air, etc." could not be got rid of altogether. If they could, "the case would have been amenable to the Method of Difference."[2] That is to say, if they could, we should have had the fact of uniform perpetual motion before our eyes, and there would have been nothing left to infer. The Method of Difference, however, is also used for the ground of an inference of this description: that because, in observed instances, ideas of a pleasurable or painful character form associations more easily and strongly than other ideas, therefore they will do so in all instances.[3] The truth is that almost anything can be said in logic by means of algebraical symbols, *A B C*, *a b c*, etc., and passed off as valid. Mill was certainly much more sparing in his use of such symbols than many subsequent writers, but when he has used them, they have not failed to mislead him.

[1] *Cf.* Lotze, *Logic* (Translation, Clarendon Press Series), 2d ed., vol. II, pp. 23 and 24.

[2] Mill, *Logic*, 3d ed., vol. I, p. 413. [3] *Ibid.*, p. 499.

The instances *A B C, a b c, A D E, a d e*, and so on, may stand for instances in which the agent and the thing acted on are the very same individual concrete subject and object, in the very same environment. Then the application of either method means that we have the fact inquired into before our eyes. Or they may stand for instances in which the agent and the patient are merely things belonging to the same class, — arsenic perhaps, but not the same arsenic; a man, but not the same man; or an animal, but perhaps not even one of the same species. The salient question, how far we may extend our analogies, concluding what we know to be true in one instance to be true in other instances; or, in other words, in how far, and in what circumstances, we may regard instances as being practically identical, is precisely what is left out of account in the methods altogether.

The Method of Concomitant Variations similarly means sometimes actual ocular evidence, sometimes inference by analogy.[1] The fact that bodies fall perpendicularly towards the earth, no matter how it rotates and travels, is cited as such an instance. It is plainly a matter of direct observation, combined with the deductive knowledge that the earth does rotate and travel. The commoner class of instances brought under this method are of a different sort altogether. They are such as the proof of the expansion of bodies by heat, which, of course, widely transcends the facts observed.

The Method of Residues is treated as if it were a method that we make use of in an alternative fashion with the other four, but what does it mean really? It means simply using such previous knowledge as we possess, to narrow the field of inquiry. It is the first thing that is done in every conceivable case of reasoning. There is no possible enquiry of any sort from which its application is absent. Let us take one of Mill's instances, the instance of Dr. Wells' discovery of the theory of dew, and see what the mental process employed really is. What we begin with is of course what Mill calls the Method of Residues, that is, the application of our pre-

[1] Mill, *Logic*, 3d ed., vol. I, p. 409.

vious well-established knowledge to narrowing down the matters of enquiry. We may, with Mill, leave out the strictly scientific generalizations with regard to the quantity of aqueous vapor that air, at a certain temperature, will hold, — though no one does, as a matter of fact, leave out in a real instance anything that he knows, and the mere supposition that he can do so is itself liable to be a source of illusion, — but, at any rate, we must not leave out of account the ordinary knowledge that every moderately educated European adult possesses. Such knowledge negatives at once a great variety of hypothetical explanations of the phenomenon, that might present themselves to a child or a savage. It negatives such hypotheses as that the dew sprang into existence out of nothing, that it reached the place where we see it without passing through the intermediate space, or that it exuded from the substance, say the glass plate, on which it appears. It negatives every hypothesis indeed, except the hypothesis that the dewdrops, immediately before they existed as water in its visible form on the bedewed object, existed somehow as water in its invisible form in contact with it. How that happens is the residual phenomenon, the sole matter left to be enquired into. It is well, however, to note what are the essential limits of such an enquiry. We cannot reconstitute for sense the actual fact that happens in the deposition of dew, as we conceivably might, if we had instruments immensely more powerful than any that we possess. What, then, can we do? At the most, no more than this: we can enquire what other phenomena there are in nature similar to the deposition of dew, and, if we know what goes on in the case of such phenomena, such knowledge may aid us in representing to ourselves what goes on in the case of the deposition of dew. Reason as a cognitive faculty is an extension of sense, but all that it can do for us in respect of facts that must forever remain hidden from sense, is to point out to us some fact with which we are familiar, and to say: "The fact that you are searching for is a fact of the same class as that, perhaps to all intents and purposes identical with it; and if you take the analogy of the

familiar fact as your guide, you will be able to explain much that would otherwise remain mysterious." Thus it can give us some conception of what happens when sound and light travel, by pointing to the familiar fact of wave motion in water, and telling us that their motion is wave motion also.

In the case of the dew, we have not far to seek for the familiar phenomenon. The conversion of vapor into water when we breathe on glass, or other similar facts, suggests the hypothesis that vapor is deposited from the air when the bedewed substance is colder than air. What do we do with the hypothesis? We proceed provisionally to treat it as an established truth and to deduce its consequences. When Mill comes to treat of Deduction, he tells us rightly that it separates itself into three stages, an Induction, a Ratiocination, and a Verification. The same thing is true of all reasoning. The first process is the induction, in other words, the hypothesis, the guess as to how the fact of which we have a fragment before us would, if we had it as a whole, really appear. Hitting on hypotheses that turn out right is the prerogative of genius. For the rest of the process, it is mainly care and industry that are required. In the present case, however, the application of previous knowledge left little choice but the hypothesis described. Having got our hypothesis, we next deduce from it some individual consequence (the ratiocination), and ascertain whether it accords with fact (the verification). The ratiocination in the present case would be, that some particular bedewed plate will be found to be colder than the air at a little distance from it. We try it. It comes out right. We find then that our theory has enabled us to explain a fact, or to make a prediction, as we choose to view it. The explanation of a fact is always, from another point of view, equivalent to the making of a prediction. If a theory enables us to make enough of such explanations and predictions as to eliminate chance, and if one never turns out wrong, then we say that it is a true theory. We have indeed in numberless instances no other criterion of its truth but this. We cannot submit such facts as the deposition of dew, or the wave motion of sound

and light, to the direct evidence of sense; nor, unless we had an angel from heaven to converse with, to the evidence of testimony. We can only submit some of the consequences of such theories to sense, and test them. The account of reasoning which Mill gives in his chapter on Deduction is, in the main, true of all reasoning. The doctrine of the Inductive Methods is, I think, an excrescence on his valuable work. The salient difference between the process that he looks upon as Induction and that which he looks upon as Deduction, is that in the first the theory may be regarded as established to begin with, and we may take its consequences as certain beforehand, while in the second, the theory is a guess, which may be confirmed, if whatever we predict by it, or explain from it, turns out right. No hard and fast line, however, can be drawn between the two. All theories, at one stage of their history, have occupied an intermediate position. They have enabled predictions to be made with some confidence, and have themselves been confirmed when these predictions turned out true.

The above considerations are sufficient, I think, to make it clear that Mill's metaphysical theory, that causation is reducible to the mere constant conjunction of events, was a source of nothing but confusion to him in his logical teaching. A class of considerations that place in a strong light its inadequacy to explain the facts that it professes to explain, are those connected with that description of causation that in the Aristotelian system is known as the *causa materialis*. In his criticism of Hamilton's theory, Mill, no doubt, hardly goes too far in describing the latter's amazing fancy that causation involves an innate belief in the indestructibility of matter, as little better than a *mauvaise plaisanterie*. He misses, on the other hand, the interesting point that Hamilton brings out, that, when we analyze our conception of cause and effect, we find that "we think of the cause as containing all that is contained in the effect, the effect as containing nothing but what was contained in the cause." It is all very well for Mill to say that the cause that Hamilton refers to is *Materia*, and that

what all the rest of the world mean by a cause is *Efficiens*. But the rest of the world, both lay and philosophic, continually and naturally treat *Materia* as a cause quite equally with *Efficiens*. What, for example, to revert to an instance suggested above, can be more natural than to describe last night's rain as the cause of the floods in the rivers and of the pools of water in the streets to-day? The significant element in causal conjunctions of this sort is that, not only do they give us priority on the part of the cause and sequence on the part of the effect, but even after the effect is produced we continue to see the whole cause in it. Mill himself recognizes that the causal connection between the combination of oxygen and hydrogen and the phenomenon of water, is Transformation.[1] This is surely something very different from invariable conjunction, but the necessity of modifying the Humist canon in conformity with such a conclusion does not occur to him.

It is in the perception of this underlying identity between the cause and the effect that the intelligibility of causation, in so far as it is intelligible, consists. Hume remarks, with regard to such a sequence as that between the length of the arm in the lever and the force that it enables us to exert, that we know nothing about it *a priori*, any more than we do about such a sequence as that between the ignition of powder and the consequent explosion. In that, of course, he is perfectly right. The fancy that *a priori* knowledge, itself a contradiction in terms, has anything to do with self-evidence is a pure illusion. There is, however, it is obvious, a wide distinction between the sequence in the case of the lever and in that of the spark and the gunpowder. We can, as we put it, understand the one, but not the other. We notice, too, this about the sequence in the case of the lever, that it is difficult even to state it as the conjunction of two facts. It presents itself as indissolubly one, and any separation we can make between its beginning and its ending is obviously purely artificial. It is the case, of course, that in a lever of the first kind, an arm of a yard in length between us and the fulcrum,

[1] *Logic*, vol. I, p. 451.

will give us greater power than an arm of a foot in length; but that is only a small part of the truth. The full truth would involve an expression of the quantitative concomitant variation between the length of the arm and the resulting power. Hence, in any practical instance of the use of the lever, we have not one conjunction of events presented to us, but an infinitude of conjunctions, crowded into each moment. We have a series without a break, and that is what conforms to our conception of a whole or a unity. At bottom, not only is the unity of the fact a series, but the unity of the thing also consists in its being a series; though, in the latter case, it is further, as Kant observes, a reversible series. It thus happens that, in the case of the lever, our description of the cause, involving particulars as to the length of the arm, the force of the agent, the weight of the thing acted upon, and the fact of the exertion of the force, is a description also of the effect. A sequence of this sort is the ideal of causation. It is a case of causation which is all under our eyes, in which there is no gap left to fill up by inference. It is the only sort of causation that will correspond to Mill's conception of invariable unconditional antecedence. His example of such antecedence [1] is the case of the presence of the sun, with his light not extinct and no opaque object between us and him, and daylight, an instance in which the same words that describe the cause describe the effect also. It is a self-subsistent whole, that suggests no further enquiry. The case of the spark and the explosion, on the contrary, is like the beginning and end of a sentence, with the middle left out. We have the two ends of the series, and a manifest hiatus between them. Such gaps it is the business of science to fill up. The interpolation of the missing links we regard as the explanation of the phenomenon presented. It brings us nearer to the perception of the fact as a whole, and thus we seem to approach a comprehension of it. With each link that is filled up, it must be observed that we reach a law of wider generality. Between the phenomenon of the beating of a drum and the sound that we hear, science

[1] *Logic*, vol. I, p. 350.

has interpolated the air wave; and not only is it the case that the connection between air waves and sound is a wider law than the connection between drum beats and sound, but the conception of wave motion as the cause of the sensation of sound suggested it as the cause of the sensations of light and radiant heat also. Hence we seem always to be approaching the same goal by different roads. On the one hand, the perception of an analogy gives us the clue to fill up a missing link in the series that we call a fact; on the other, every missing link filled up involves an extension of our analogies, an apparent approach to an ever receding unity.

The approximation to identity between cause and effect is something that admits of degrees. Suppose I paste some discs of white paper on a black surface; the result is piebald. It is hard to say whether 'Black and white is piebald' is more properly to be regarded as an identical proposition like 'Black is black,' or whether it is to be reckoned among the truths that we call empirical. If I move some distance off, the result is gray; or if I make the experiment with blue and yellow, the result is green. That the mixture of a blue pigment with a yellow one makes green, is beyond all question an empirical truth. It is not without surprise that most of us learn, in the first instance, that it does so.[1] Yet there are points at which it is hard to say whether the phenomenon presented is blue and yellow, or is green; and even when it is clear that it is green, we still continue to see the blue and yellow in the green, that is, the whole cause in the effect. The same thing is true of the blending of pressures in the parallelogram of forces. We have in such cases resemblance between cause and effect, and resemblance which is a clue to their identity. This very invariable conjunction that we hear so much about, what is it in truth? There is never such a thing in the world of concrete realities as the mere conjunction of two isolated facts. Not only does fire cause the sensation of heat, but the intensity

[1] The continuity between simple and heteropathic causation is also seen in the case of sound, in the insensible transition from a series of noises to a musical note.

of the sensation is in proportion to the size or nearness of the fire, and varies as it varies. The concomitant variation between the number of vibrations and the pitch of musical notes is a familiar illustration of the same principle. Such concomitant variations are brought under the head of constant conjunction, by supposing them to be due to the repetition of some imaginary unit in the cause and in the effect at once. The notion is strained, as the unit is entirely fictitious; still it may be useful as assisting us to understand what this constant conjunction is, and in what its significance lies. The equivalent multiplication of the supposed unit would be what in mathematics we call proportion, and which is the very type of analogy. It seems that constant conjunction itself is therefore simply the most elementary form in which this all-pervading principle of proportion, fitness, resemblance, and finally identity, between cause and effect, the very existence of which is denied, presents itself.

Mill, like Hume, throughout treats any resemblance that makes itself apparent between causes and their effects as a mere source of illusion. This is due to his confining his attention to examples of a very special character, drawn for the most part from chemistry. In practical enquiries some resemblance between something in the cause and something in the effect, the track and the foot, the wound and the instrument that inflicted it, the substance on the instrument and human blood, is ordinarily all that gives us a clue to the solution of our problem. It is to be remarked, however, that mere resemblance in itself warrants no inference. It is only resemblance, in as far as it indicates identity, that does so. How widely the rule holds good that resemblance is an indication of that sort of identity that warrants inference, is a fact that has been, in the main, overlooked by logicians. The known equality of two objects always imports that they have been made equal to each other. Their equality is a characteristic that necessarily has a history. Paint from one pot presents a resemblance, no matter what surface it covers, to other paint from the same pot, and a resemblance that may guide us to its origin. In organic life, Nature works by the same rule. Resemblance is

there, if sufficiently essential, an infallible clue to origin. We have, in such a fact as this, one of that class of widely prevalent laws which Aristotle, more than two thousand years ago, detected and named "imitations of first principles."[1] Closely connected with it is the fact that the changes which one individual subject undergoes are largely the equivalent of the differences between various individual subjects of the same class. So much so is this the case, that even so accurate a writer as Mill ordinarily confounds the two. His application of all his methods refers miscellaneously to changes that take place in individual objects, and to differences that exist between objects of the same class.

We find a striking imitation on the part of Nature of the first principle last alluded to, in the fact that the development of the embryo is an epitome of the development of the race. The existence of such imitations of first principles helps to account for some of the marvellous guesses of philosophy. In England and France, the prevalent tendency is to slight the attention paid in Germany to matters of abstract thinking. We must not forget, however, that Leibnitz, with his law of the continuous gradation of created beings, anticipated by two hundred years the discovery of the evolution of species; and, in his theory of causation, came very near to an anticipation of the discovery of the conservation of energy. The attention paid to first principles in Germany also brought it about that, fifty or a hundred years ago, historical questions were treated there, not only by Hegel, but long before his day by Lessing, in a manner in which we are only beginning to treat them now in England, in the light of Darwin's all-embracing theory. If we ask, moreover, whence it was that Carlyle drew his characteristic doctrine that nothing survives in the world but what deserves to survive, — a corollary, as one would think, from the law of the survival of the fittest, — the answer must be that it was assuredly not from any scientific source, in the narrower sense of that word. It had filtered down to him, through Goethe, from Spinoza and Leibnitz, and had its origin in the

[1] *Metaphysics*, bk. I, ch. VI *ad finem*.

conception, common to these two great thinkers, of evil as something negative and necessarily self-destructive.

If the causal relation consisted in nothing else but the constant conjunction of one physical fact with another, then, of course, the attempt to infer from physical facts a supersensible cause would be necessarily an illusion. As that view of the causal relation, however, though much in fashion at present, will not in any way square with what it has to explain, the attempt at such an inference is not, at any rate on that simple and obvious ground, at once out of court. Not only in practical enquiries, but in the enquiries of such sciences as geology and archaeology, we start from an effect only as our datum, and endeavor, from what we can discover as to the nature of this effect, to reconstruct the whole of which it is a fragment. A phenomenon that presents a manifest adaptation of means to ends, while what or who brought about this adaptation remains unknown, will always be for us a fragment that suggests the necessity for some explanation. It is easy to label the inference, that such instances of adaptation must be the work of some mind more or less analogous to the human mind, as 'anthropomorphism'; and thus think that we are done with it; but who will tell us where legitimate inference ends, and where this anthropomorphism begins? There is a sense in which it is anthropomorphism for me to infer that the feelings of another are like my own from the similarity of their outward expression; but this anthropomorphism is not an illusion. At what point does it begin to be one? How far may we legitimately press the inference of purpose as manifested in human works to the inference of purpose as manifested in Nature? That is the main theme of Kant's great work. Unfortunately any one can find there any answer which he desires to find. Huxley and Lilly can quote Kant with equal approval, and, for that very reason, with equal futility. His conception of the universe of sense and thought is one of several universes separated by impassable chasms. One chasm divides the things of sense from the things of intelligence; another, the truths of speculation from the truths

of practice. Hence, the existence of God may be true from the practical point of view, but untrue from the speculative, so that we are left no wiser than we were before. The conception of the existence of any such abysses between one class and another of the facts of Nature and Mind, is a misleading one. There is, on the contrary, a perfect solidarity discoverable between them all, between our most rudimentary localization of a sensation, and our insight into the deepest law of physics or of thought. It took mankind many ages to evolve the conception of Mind as the cause of the order and beauty observable in the universe, and to get rid of "the vain theories of the earlier ages."[1] It may take them many ages more to so modify the conception as to bring it into harmony with their ever widening knowledge. It seems hardly possible to believe, however, that, once discovered, such a conception will ever be altogether cast aside or lost to the world. It may be that the belief in Mind as somehow immanent in Nature, is destined to be the belief of the future; but if it is, such immanence will still unquestionably have to be reconciled with the fact of a forethought that has planned the processes in which it is immanent.

WILLIAM W. CARLILE.

[1] Aristotle, *Metaph.*, bk. I, ch. III *ad finem*.

THE NATURE OF INTELLECTUAL SYNTHESIS.

IT is one of the commonplaces of modern philosophical theories that knowledge is the result of the synthetic activity of consciousness. There is, perhaps, no notion to which appeal is so frequently made in current epistemological discussion as that of Synthesis. The significance of Hume in the history of speculation, it is often remarked, consists in the fact that he demonstrated the impossibility of accounting for knowledge from the standpoint of individual impressions and ideas. His investigations proved conclusively that if all mental states are distinct and separate existences, it is impossible to discover any principles of universal and necessary connection which afford at the same time any justification of their use. And the historical expositions with which all are familiar, proceed to show how Kant answered the problem which his predecessor had pronounced insoluble, by bringing to light the synthetic activity of consciousness, and proving that knowledge is the result of a construction on the part of the mind itself. The justification of synthetic propositions *a priori*, — that is, of propositions which do not depend upon this or that particular experience, but are valid for all men, — is to be found in the fact that the thinking process which determines the nature of these propositions is itself a synthetic unity.

Historically, then, we find that the notion of Synthesis was brought into prominence in modern times through Kant. Moreover, the influence of the Kantian system — and especially of the *Kritik of Pure Reason* — has been so great that there is, perhaps, danger that this principle may become obscure from its very familiarity. For, as the *K. d. r. V.* has formed an important factor in nearly everybody's philosophical education, it is probable that one's mode of conceiving of Synthesis has, consciously or unconsciously, been influenced by Kant. It may, therefore, be advantageous, before attempting any exposi-

tion of this notion, to undertake a brief inquiry regarding the nature of the function which this principle is called upon to perform in the Kantian theory of knowledge.

It will, perhaps, make the matter plainer if I first state my conclusions. The thesis which I think can be established without going into any very detailed examination of particular passages in the *K. d. r. V.*, is that Kant always conceived of Synthesis as a process of externally joining part to part. The parts are supposed to be combined together in an order which possesses strict universality and necessity, but yet they are regarded as really existing things which enter externally into the nature of the whole. In short, we may say that the product of Synthesis remains for Kant a mechanical, and not an ideal, whole. I shall also attempt incidentally to show that the negative conclusions of the first *Kritik* are the immediate consequences of the external way in which he continued to think of this fundamental principle. It may also be well to add here, in order to anticipate an obvious objection, that there can be no question that the passages in which Kant exhibits the unity of Apperception as the highest principle of Synthesis *can be read* so as to refute the interpretation which I have undertaken to defend. Indeed, these passages may be said to contain in germ the whole of the newer doctrine of Synthesis which has been developed since Kant's time. Nevertheless, there can be no doubt that Kant builded wiser than he knew. Whether or not we accept Fichte's conjecture that the Holy Ghost spoke truth through Kant of which the latter did not dream, both the form in which he stated his problem, and the consequences he deduced from his system regarding the limitation of knowledge, prove conclusively that he could never have realized the full reach and significance of the doctrine of the synthetic unity of apperception.

The mechanical nature of Kant's conception of Synthesis is at once evident from the description of Judgment given in the Introduction to the *K. d. r. V.* For in that account he assumes the correctness of the traditional view of Judgment, as a process of passing from a given subject-notion in order to

unite a predicate with it. This doctrine of Judgment may be fairly said to be based upon an analysis of the spoken or written proposition, rather than upon that of the thought-process of which the proposition is the expression. In speaking or writing, the parts of the proposition fall outside each other: the subject comes first and the predicate later. The same relations are therefore supposed to hold true of the parts of the Judgment. Where the predicate is not already contained in the subject, as is the case in analytic propositions, Judgment consists in going beyond the subject to a predicate which lies completely outside it. Accordingly, we find that the problem which Kant sets for himself is to discover how it is ever possible, with full assurance of the universality and necessity of the process, to go beyond a given concept *A* to a foreign predicate *B*, and also to determine the limits of the validity of this procedure. It is true he maintained that, so long as we are dealing merely with concepts, the analytical function of thought alone has validity, and no synthetic process can find justification. The point which I wish to bring out in this connection, however, as indicative of Kant's thought, is the *ideal* of synthesis here set forth, and the external character of the function which this principle is called upon to fulfil.

To pass on now to our next argument, we find Kant maintaining that the synthetic use of understanding is only possible in that transcendental or real function by means of which it unites a manifold of impressions into a whole for knowledge. "The same understanding, and through the same operations by which in concepts it achieves through analytical unity the form of a judgment, introduces also through the synthetical unity of the manifold in perception a transcendental element into its ideas." [1] What we have to follow here is the process by which Thought transforms the manifold, given in sense, into a world of objects for experience. This work is accomplished through the synthesizing activity of consciousness. Now in the operation of that function Kant maintains we can distinguish three neces-

[1] *Werke*, Bd. III, p. 99; Max Müller's translation, p. 70. The references to Kant's works are to the Hartenstein edition of 1867.

sary steps or stages. There is a synthesis of apprehension in perception, a synthesis of reproduction in imagination, and a synthesis of recognition through concepts. It is very difficult to do justice to Kant's account in a summary statement. For beneath the synthesis of the empirical manifold there runs a synthesis of pure or *a priori* elements to which he constantly refers as the explanation of the former connection. For example, in the first two stages which we have enumerated, consciousness is described as operating with the pure *a priori* manifold of sense, Space and Time. Space and Time only become wholes through a synthesis of the manifold which sense offers in its original receptivity.[1] It is clear, however, that this transcendental synthesis at once involves the connection of the empirical elements which are in Space and Time, and furnishes at the same time the explanation of the necessary character of their union.

It may, perhaps, be worth while to turn aside from the main line of our inquiry for a little, in order to investigate somewhat more closely the nature of this bewildering *a priori* process to which it seems so difficult to ascribe any concrete meaning. Without venturing to express any opinion regarding the exact nature of Kant's conception of the *a priori*,[2] we may, I think, see what real significance it had for his system. As we learn from the Introduction, and from numerous passages throughout the *K. d. r. V.*, universality and necessity are the unfailing criteria of the *a priori* character of any synthesis. Experience never gives us more than a mere factual union of different objects, and carries with it no insight into the necessity and universality of this connection. The function, therefore, which the *a priori* synthesis is called upon to perform, is to guarantee the objective character of the judgments which enter into and constitute the nature of our experience. But, since Kant took

[1] *Cf. Werke*, Bd. III, p. 118, note; Müller, p. 89.

[2] Vaihinger has shown (*Commentar zu Kant's Kritik*, Bd. II, pp. 80 ff.) that Kant really supposed the *a priori* forms to exist ready in the mind, in a way almost identical with the doctrine of innate ideas. We are concerned here, however, to determine only the *function* of the *a priori* in the Kantian system, not the nature of its existence.

for the object of his inquiry the process by which knowledge is attained in the consciousness of the individual, rather than the nature of thought as such, and as, moreover, he assumes the correctness of Hume's description of the empirical consciousness, he is compelled, in order to explain the universality and necessity presupposed in our judgments, to have recourse to a synthetic process *a priori* which goes on within the shadowy realms of pure thought.

In order to awaken popular sympathy, it is only necessary for one to pronounce on the uselessness and absurdity of any such '*a priori*' or 'transcendental' function. Instead of doing this, or delaying to criticise the machinery which Kant introduced to account for synthetic propositions *a priori*, it is, I think, more important to note the real significance of the conception. For, if we free this from the accidental peculiarities which attach to it in Kant's system, it is evident that to assert the existence of synthetic judgments *a priori*, means only that we *do* succeed in reaching conclusions, into the universality and necessity of which it is possible to see. Or, in other words, it is to assume merely the possibility of certainty with regard to our knowledge. Furthermore, this certainty (as Hume showed) cannot be justified in any way from the facts of the purely empirical consciousness, but forces us beyond it. Without attempting to defend Kant's mode of conceiving this *a priori* function, it is possible to recognize the importance of bringing to light this objective aspect of Thought. Kant's description of pure or *a priori* processes of Synthesis, then, will not be without meaning, if we understand that his object is to get beyond the individual consciousness, with which he began his investigation, to the objective or necessary conditions presupposed in knowledge as such.[1]

After this digression, we may now return to the examination of the process by which knowledge is constituted. The synthesis of sense and that of imagination (which are really

[1] Since the above was written my attention has been called to an article by Kühnemann in the *Archiv f. syst. Phil.*, I, 165, which seems to give the same interpretation of the *a priori*.

inseparably connected and presuppose each other[1]) result in a collocation of images which are not yet objects for knowledge. Before the images, thus held together by imagination, can enter into the unity of experience, the understanding must recognize the necessity of the rule which the synthesis has hitherto been following blindly. That is, the connection must be justified by the recognition, on the part of the understanding, that the process has taken place in accordance with the nature of the highest principle of Synthesis, the unity of self-consciousness. As I have already admitted, this latter doctrine, *taken by itself*, can easily be interpreted so as to carry us beyond the province of the mechanical categories. But the manner in which the schemata, 'sensuous on one side and intellectual on the other,' are interpolated to bring the sensuous image into connection with the pure categories, indicates that even here Kant is thinking of the synthetic process as an external union of disparate elements. And this impression receives further confirmation by an examination of the highest application of the categories in the passages treating of the Analogies of Experience.

"These Analogies are nothing but principles for determining the existence of phenomena in time according to the three modes of the latter."[2] Even when phenomena are determined by the highest of these principles, that of Reciprocity, they do not form a whole of experience in any true sense. For, although the phenomenal objects cohere according to necessary laws, their connection is still an external relation which exists *between* them. The categories of Relation are external bonds which fix and objectify the temporal relations of phenomena, not ideal principles which transform perceptive togetherness into an intellectual unity. As a consequence, each object refers to something outside itself, and so gives rise to an infinite regress. In spite of the reference to the Unity of Apperception, nature exhibits no true unity, for its objects still retain in large measure the characteristic isolation which belonged to

[1] *Werke*, Bd. III, p. 127; Müller, p. 91.
[2] *Ibid.*, Bd. III, p. 191; Müller, p. 188.

them before their union with the category. Even when these highest categories have done their work, thought has constituted no systematic whole of experience, within which ideal unity objects might fall as mutually determining parts. Our experience remains to the last an external aggregation of perceptive objects standing outside each other in Space and Time, which by their very nature forbid the possibility of complete unification.

Another point which may be put in evidence, is the opposition which Kant maintains between Analysis and Synthesis, as that between the formal, or logical, and the real, or transcendental, functions of thinking. The analytic activity of Thought, as we have already seen, operates in accordance with the Law of Identity, when we are concerned with the relations of concepts to each other. From this field Synthesis is excluded. It, however, finds valid employment in unifying the manifold given in Perception, — a field in which Analysis is powerless. Each thought-activity, therefore, is regarded as having its own separate function to which the other is not suited, and each is supposed to work in isolation from the other. But Analysis cannot be opposed to Synthesis in this way, unless the latter is regarded as a process of building up a whole, in a way analogous to that by which material wholes are constituted. When we are dealing with a material thing, the process of putting together parts *is* the opposite of that of decomposition or disintegration. In an intellectual process, as I shall try to show later, this opposition has no meaning. Here Analysis and Synthesis presuppose each other, and must go hand in hand. Only if we assume that, in thinking of Synthesis, Kant must have had an image of material processes before his mind's eye, is it possible to explain his separation and opposition of two aspects which are involved in every act of Thought.[1]

[1] Kant does say that Analysis always presupposes a previous Synthesis, but this is only because it is impossible to disjoin what has not already been conjoined. (*Werke*, Bd. III, p. 115.) The passage does not, I think, afford any ground for supposing that he believed Analysis and Synthesis to be involved in one and the same activity.

The most convincing proof that Kant never got beyond a mechanical view of Synthesis is found, however, in the conclusions which he drew from his system, regarding the limitation of knowledge. For it might possibly be maintained that his formulation of the problem, and earlier utterances, are to be taken as merely provisional, and not as indicative of his real position. And it may well be admitted that it is always necessary, in reading the first portions of the *K. d. r. V.*, to attach considerable importance to what Professor Caird has called Kant's 'pedagogical method' of going beyond and transforming the point of view which he at first provisionally adopts. But the negative doctrines which are stated at the end of the Analytic, and worked out more fully in the Dialectic, were written after the positive part of the system had been completed, and are, moreover, of such importance in themselves that there can be no doubt that the ideal of knowledge which they presuppose represents Kant's final view. And the arguments upon which these conclusions are based rest, as we shall see, upon that conception of Synthesis which has been found to exist in the earlier passages of the *Kritik*.

The valid use of concepts presupposes that perceptions are given in experience to which they are applied. "What is required of every concept is, first, the logical form of a concept in general; and, secondly, something to which it refers. . . . The only way in which an object can be given to a concept is in perception (*Anschauung*). . . . All concepts, therefore, and with them all principles, though they may be possible *a priori*, refer nevertheless to empirical perceptions, that is, to data of a possible experience. Without this they would be a mere play, whether of the imagination or the understanding, with their respective ideas." [1] "It is for this reason that an abstract concept is required to be made *sensuous*, that is, that its corresponding object is required to be shown in perception, because without this the concept (as people say) is without *sense*, that is, without meaning." [2] "It might therefore be

[1] *Werke*, Bd. III, p. 211. Müller, p. 208.
[2] *Ibid.*, Bd. III, p. 211. Müller, p. 209.

advisable to express ourselves in the following way : The pure categories, without the formal conditions of sensibility, have a transcendental character only, but do not admit of any transcendental use ; because such use is in itself impossible, as the categories are deprived of all the conditions of being used in judgments, that is, of the formal conditions of the subsumption of any possible object under these concepts. Since, therefore, as pure categories, they are not meant to be used empirically, and cannot be used transcendently, they admit, if separated from sensibility, of no use at all. That is, they cannot be applied to any possible object, and are nothing but the pure form of the use of the understanding with reference to objects in general, without enabling us to think or to determine any object by their means alone." [1]

A multitude of passages to the same purpose might easily be cited, for this is a doctrine which is constantly reiterated throughout the whole of the Dialectic. On examining these statements a little more closely, however, there seem to be two ways in which they may be understood. One might take them as simply equivalent to the assertion that thought cannot operate in a vacuum, but must always take the facts of sensuous experience as its datum. Or, secondly, their meaning may be that, before we can have valid knowledge about anything, sensuous 'matter' *corresponding to that object* must either be actually given, or at least be conceivably capable of being so given. The first proposition asserts that, in attempting to understand the world, we must begin with our perceptive experience of it ; the second demands that, in the case of each 'object of knowledge,' the appropriate matter be furnished for subsumption under a concept. Now I venture to think that it is not unusual for one, without clearly realizing this distinction, to adopt the consequences of the second of these positions out of sympathy for the undoubted truth contained in the first. Kant brought philosophy back from the fruitless attempt to evolve knowledge out of concepts by purely logical processes, by showing that these latter could only result in the thought of

[1] *Werke*, Bd. III, p. 216. Müller, p. 216.

'an object in general,' and were utterly incapable of furnishing the determination necessary for a concrete object of experience. The great service which the Dialectic really performed in this respect, by overthrowing the dogmatism of eighteenth-century Rationalism, is to a nineteenth-century mind a strong point in its favor. But to overthrow Rationalism, it would have been sufficient to show the barrenness of thought when divorced altogether from the reality given in perceptive experience. Kant, however, as I shall proceed to show, held to the doctrine contained in our second proposition, and on this view is based his denial of a constitutive function to the Ideas of Reason.

When we turn to the different destructive arguments of the Dialectic, it becomes clear that they all rest ultimately on the impossibility of any object *corresponding to* the various Ideas of Reason being given in experience. Thus in the first Paralogism of Psychology we find Kant arguing: "So far from being able to deduce these properties [Immutability, Immortality, etc.] from the pure category of substance, we have on the contrary to lay hold of the permanence of an object given in experience, if we wish to apply to it the empirically useful concept of substance. *In this case, however, we had no experience to lay hold of.*[1] . . . For, though the Ego exists in all thoughts, not the slightest perception is connected with that idea by means of which it might be distinguished from other objects of perception."[2] In the proof of the Antithesis to the Second Antinomy — that there exists in the world nothing simple — Kant's argument is simply that no perception of anything corresponding to a simple object can be given in any possible experience.[3] It is the lack of the appropriate 'matter of perception,' necessary to convert the mere concept of a Supreme Being into a real object of knowledge,

[1] Italics added.

[2] *Werke*, Bd. III, p. 587. Müller, p. 304. *Cf.* also *Werke*, Bd. III, p. 286. Müller, pp. 330, 344, 345.

[3] Hegel puts Kant's argument as follows: "The entire experience of our seeing, feeling, etc., reveals to us only the compound. Also the best microscopes and sharpest knives never enable us to reach the simple. Reason then must not assume it either." — *Werke*, Bd. III, p. 217.

that invalidates the Ontological argument, to which the Cosmological and Teleological arguments ultimately go back. That in every case a valid object of knowledge can only come into existence when the matter from which it is to be made can be furnished by perception, is so clear from the whole course of the Dialectic that it seems superfluous to cite more passages in support of the statement.[1] It is, I think, already sufficiently evident that the synthetic activity, by means of which the mind makes its objects, is confined to cases where the 'matter' necessary for this construction can be given in sense perception. Cognition of supersensible objects is pronounced invalid, not because there is no datum from which Thought may start, but because nothing *corresponding to* the object which we claim to know, can from the very nature of the case be given in perception. The Category is at hand ready to do its work; there is, however, no 'manifold of sensation' to which it may be applied, and from which it can derive the definiteness and specification which necessarily pertain to an object of knowledge. And so we are left with the conclusion that only objects which are in Space and Time are capable of being known, for the material out of which objects are fashioned is not given except under these forms.

Although it has obviously been impossible to undertake here an exhaustive examination of special points in the *K. d. r. V.*, the fundamental character of Synthesis as it was employed by Kant and some of its more important consequences have, I hope, been made clear by our discussion so far. We have found that Kant must have interpreted the statement that experience is a compound, in the most literal and external fashion. Each object of knowledge is taken as really composed of a contribution from sense and a contribution from understanding. These elements really enter into it, and can be analyzed out of it, as a chemical substance is decomposed into its elements. The synthetic character of thought, which Kant brought to light, is conceived by him as analogous to a process of mechanical fabrication, or chemical combination.

[1] *Cf.*, however, *Werke*, Bd. III, p. 511; Müller, p. 663; *Prolegomena*, § 34.

The new wine of the Critical Philosophy was still contained in eighteenth-century bottles.

So far I have not attempted any positive statement as to how Kant's conception of this principle must be transformed. There are two reasons which might be given in justification of the course we have been following. In the first place, consciously or unconsciously, we are almost certain to think of Synthesis through the images which the *K. d. r. V.* has made so familiar to us; and secondly, here, as so often, Kant enables us to see beyond the conclusions in which he himself rests. In going on to indicate how it is necessary to transcend his way of conceiving Synthesis, we shall then be frequently following the direction which he himself has marked out. It was Kant's great merit to show that thinking is synthetic; *i.e.*, that it is not confined to a merely formal use, but is directly concerned with the nature of real things. For real things, at least in so far as they are of any importance for knowledge, depend for their very existence upon the synthetic activity of thought. But although he admitted that the purely logical use of understanding does not serve in the least to extend our knowledge, and 'can never carry us very far,' it was still retained alongside of Synthesis as a real and separate characteristic which belonged to the nature of thought.

In going beyond Kant, one must in the first place assert that the distinction between the real and the formal or logical function of thought is a fiction. All thinking is concerned with the nature of reality. Judgment, as a process of operating with concepts which have been divorced from real things by abstraction, has no existence outside treatises on Formal Logic. It will not be difficult, I think, for one to convince himself that every real judgment is an activity by means of which thought seeks to make some part of the real world (and hence the world as a whole) more fully intelligible to itself. If one adopts the view that Judgment deals only with ideas, it is difficult to see how, after having determined, according to the rules of Formal Logic, the consistency of one's

thoughts, the horrible suspicion can be averted that perhaps, after all, the whole fabric of supposed knowledge may not be true of reality. When we attend, however, to what takes place in consciousness, when we actually *judge for ourselves* and do not merely repeat meaningless propositions like, 'Man is mortal,' 'Socrates is a man,' the inadequacy of the definitions which make Judgment consist in the connection or separation of ideas becomes evident.[1] The very essence of the judgment-process consists in going beyond ideas and professing to specify the nature of something real. I do not wish to discuss here the question, how it is thus possible for Judgment to affirm a relation that holds true beyond itself. That would be to raise the whole problem, how knowledge is possible at all. It is at once evident, however, that we are required to assume: (1) that the judgment function is something more than a psychological process which exists in a single time-moment; and (2) that the real world to which we refer, falls, at least partially, within our thought.

I have already said that the description which Formal Logic gives of a Judgment, as a process of passing from a subject to a predicate notion, is based upon an analysis of the Proposition. A Judgment, however, is a whole, and is not made up of independently existing parts, like the Proposition. It may be urged, nevertheless, that it is always possible to find within a judgment elements which correspond to Subject and Predicate. The answer to this is, that differences are just as essential to the nature of Judgment as identity. A judgment always exhibits the identity or unity of different elements or aspects of reality. What must be denied, however, is that the starting-point of the process is a whole without differences, — a Subject which is subsequently qualified by the addition of a foreign Predicate-notion. It is possible that it may still be objected that all judgments presuppose the existence of concepts. May we

[1] According to Sigwart "the act of judging consists in the thought by which two ideas are consciously unified" (*Logik*, Bd. I, p. 63). Wundt, on the other hand, finds the essence of Judgment to consist in the Analysis of a *Gesammtvorstellung* into its elements (*Logik*, Bd. I, pp. 154 ff.).

not have a concept of an object without making any judgment whatsoever? This question might fairly be answered by pointing out that concepts also presuppose that judgments have taken place. The objection, however, rests upon the assumption that a concept is a fixed and substantial existence which maintains itself permanently, apart from any activity of consciousness. The concept is regarded as something lifeless, something which has within itself no capacity of development, but can be altered only by external modifications. To support the contention, it must either be supposed that the concept once formed, though the product of thinking, no longer requires the activity of intelligence to support it in consciousness; or, secondly, that it is possible to *think* a concept without making judgment regarding it. The first supposition is seen to be untenable as soon as we ask the question which Berkeley has taught us to raise: What *kind* of existence can the concept be conceived to possess under such circumstances? Its supposed existence rests upon the false idea that we can separate entirely the product of thought from the process of thinking. And, secondly, one may easily convince himself by actual experiment of the absurdity of supposing that it is possible to think of something without making any judgment regarding it. For it will be found that it is impossible to apprehend any object as absolutely simple, and, if differences are united in our thought of anything, we have already made it the object of a judgment.

It seems impossible, therefore, to maintain any essential difference between Conception and Judgment, or to distinguish them as earlier or later in time. One must rather regard a concept as the embodiment of a whole series of judgments. The concept of anything may be said to be a shorthand formula for the judgments that we are accustomed to make regarding it. Or, perhaps, it would be truer to say that our concept of an object at any time represents the permanent judgment, or implicit series of judgments, which consciousness is then affirming of it. A concept, then, is simply a permanent habit of judging about any content.[1]

[1] *Cf.* Bosanquet, *Logic*, vol. I, p. 41.

If this interpretation be accepted, the statement that our starting-point in Judgment is the concept may be allowed to stand. It will now only signify, however, that we must set out from what we know. In seeking to specify and determine any part of reality more fully, our actually existing knowledge is the datum which is modified and supplemented. It would be a mistake, then, to suppose that the datum is ever merely a raw, unrelated 'atom' of sense. No matter how far one goes back in the development of consciousness, he will not come upon anything which is passively given. Nor is experience *logically* divisible into a 'matter of sensation' and a contribution from understanding. For consciousness itself is always a unity which takes the form of Judgment. The various stages of conscious life differ indeed in degree of explicitness, but are identical in essential character. In the more fully developed stages, *systematic* unity of whole and parts is more easily recognized than would be the case in its less advanced condition. The earlier consciousness, nevertheless, like the later, is a judgment, a whole into which differences enter, and not a mere lump of passive sensation. It is, then, a false theory of Judgment which describes it as an advance from the consciousness of a simple subject, which might be represented by *A*, to that of its relations with a 'foreign predicate,' resulting in the connection *A* is *B*.

The symbolic method of representing Judgment is another snare which always lies in wait for the writer on Formal Logic. It is a very serious question whether the symbolic representation of intellectual processes by circles, letters, and signs denoting numerical operations, does not always promote confusion rather than correctness in thought. It is certain that no external images of this kind can adequately exhibit the nature of Intelligence, and that all are open to the most serious objection. If, however, judgments *are* to be expressed symbolically, it must be borne in mind, not only that the form of Judgment belongs already to the consciousness which forms the datum, but also that the result of the further determination of the latter should find place in both parts of the proposition.

That is, since Judgment is a synthetic activity which transforms the whole content from within, the modifications to which it gives rise are not adequately represented as additions attaching themselves to the Predicate side of the proposition. If our way of judging regarding the real world, or some part of it, be represented by $A=B$, the result of a new thought-determination is not $A=B+C$. Subject and Predicate must be exhibited as developing *pari passu*, and our formula should rather read, $\alpha=\beta$, or perhaps better still, A (α, γ, δ, etc.) $=B$ (β, η, θ).[1] Although this statement has defects, it does not, like the old formula, lead one to suppose that Judgment supplements a simple datum by the addition of qualifications which lie outside it. Nor does the process appear to be an advance to something entirely new, which turns its back, as it were, upon the datum. For we see that it is the latter which emerges in a new form, though without loss of its identity, at the other end of the process. This transformation through which an identical content passes is the result of the activity of consciousness bringing to light, and relating within the systematic unity of the judgment, elements and differences hitherto unrecognized. The result of the process is to put the old in a new form. It is a process of development which results, here as everywhere, in increasing differentiation of parts, which are yet connected in a closer and more systematic unity.

What has preceded brings us to notice more explicitly the relative positions of Analysis and Synthesis in the evolution of thought. It is plain, from what has been already said, that these are correlative aspects or moments of thinking which mutually presuppose each other. If analytic reflection did not bring to light differences, there would be nothing for Synthesis to do; and if these differences were not comprehended as parts of one system, they would not be parts at all, but simply disparate units. There can be no Analysis without Synthesis, and no Synthesis without Analysis.[2] This statement does not

[1] *Cf.* Bosanquet, *Logic*, vol. I, p. 86.

[2] It was Fichte who first clearly grasped the relation between Analysis and Synthesis. The statements in the *Wissenschaftslehre* (*Werke*, Bd. I, pp. 115ff.) indicate the great advance he had made beyond Kant's position.

merely imply that these operate alternately upon every content, as two different functions or modes of activity. We rather mean to express the fact that Intelligence is a two-edged function, which unites while it separates, and separates while it unites.[1]

Synthesis as a process of intellectual construction, so far from being opposed to Analysis, includes the latter within it as an indispensable aspect of its own activity. For, when we are dealing with *thoughts*, the opposition between the process by which things are put together, and that by which they are taken to pieces, has no longer any meaning. It cannot be repeated too often that the product of an intellectual construction is *ideal*, not sensuous. That is, an object of knowledge is not the result of fusion, in mechanical or chemical fashion, of discrete psychological ideas which exist separately in different moments of time. For even if it could be shown how such psychical elements are held together, the product of their union would differ essentially from what is denoted by the expression 'unity of knowledge.' It is possible, of course, to conceive of psychical processes being fused together so as to form a sensuous unity or continuum ; but this is *not* identical with that ideal connection of meanings to which synthetic intelligence gives rise in the act of judgment. I have else-

[1] I take from Mr. Bosanquet the following example, which seems to me to bring out excellently the mutual interdependence of Analysis and Synthesis when dealing with a concrete content: "If a watch is put into my hand with instructions to find out what makes it go as it does, I have primarily a thing in space as the given whole, and indefinite wheels, springs, etc. (which as yet I cannot distinguish by position or characteristic shape) as given parts. No doubt *in space* all the parts which I shall need to learn are given *in position* within the whole, and so we tend to describe the problem as one of Analysis, in contrast to the other (in which I had to find out or imagine the position of the parts in the whole) as Synthesis; and these titles serve well enough as superficial descriptions of certain cases to which judgment and inference are applied, not of *any* judgment or inference as such. But the whole is not, in the latter case any more than in the former, given as an intelligible machine, nor are the parts given within the whole of Knowledge because they are within the whole of space. In other words, to see the escapement wheel lying inside the watch does *not* 'give' me this wheel as a part of a mechanical arrangement; to know it as a part of *such* a whole I must understand it; and in understanding it, *i.e.*, in my analysis, perform the synthesis of the watch as a definite mechanical contrivance." — *Logic*, vol. I, p. 102.

where pointed out, that when the falsity of the 'atomistic' view of consciousness, which the Kantian system presupposes, has been shown, it by no means follows, as some modern psychologists have supposed, that the principle of Synthesis is no longer required to account for knowledge.[1] For the continuous wholeness of conscious processes, which it is the merit of modern psychology to have substituted for the 'separate and distinct' ideas of Hume, is after all a merely factual combination of psychical existences, and without the synthesizing and interpreting function of Thought would, like the unrelated 'atom' of sensation, be 'as good as nothing for knowledge.' For it must be emphasized that a system of knowledge is wholly different in *kind* from any combination of mere psychological ideas. Synthesis, in so far as the word has any application in a theory of knowledge, denotes the process by which fragmentary contents or meanings are systematized and ideally connected, and is quite distinct from any combination of ideas on the side of their sensuous particularity. If one should insist on making existence in a particular time-moment the sole test of reality, it would be necessary to admit that Synthesis is not concerned with the real, but with the ideal. Or, finally, we may say that intellectual Synthesis is not a function of binding together really existing processes to make a really existing whole, but is the idealization and interpretation of a content which, as we have seen, differs only in degree, not in essential character, from the final result.

An objection may here be raised, however, that we have altogether lost sight of Perception, with which, after all, experience begins. Is not knowledge, in large part at least, derived directly from Perception; and does not this form of knowing show a connection of real existences which is characteristically different from the ideal union of thoughts in terms of which we have hitherto endeavored to describe knowledge? Is not the view, so far maintained, guilty of neglecting the fundamental distinction between Perception and Conception, and so open to the charge, which Kant brought against

[1] PHILOSOPHICAL REVIEW, vol. III, pp. 196 ff.

Leibniz, of having *intellectualised phenomena?* It is plain that, if we are to reply to this objection, we must maintain that the distinction which it urges between Perception and Thought is merely one of degree. There cannot be two distinct and separate forms of knowing. Perception is incipient thinking, and Conception nothing but more fully systematized Perception. And, in spite of Kant's express statements, this is a view to which the teachings of the *K. d. r. V.* inevitably lead. For it is there shown that perceptions only become objects of knowledge through being *thought*. Whatever may be the ground of distinction between phenomena and noumena, it is clear that these cannot be separated into two classes, of which the one is 'given' but not 'thought,' while the other is 'thought' but not 'given.' For it is *only in so far* as Perceptions are *intellectualised* that they have any cognitive value at all; while, on the other hand, all valid conceptual knowledge must have its roots in perceptive experience.

Nevertheless, it may still be objected that it is idle to attempt to efface the essential differences of these two forms of knowing. Perception reveals to us a world of real objects, each occupying its own position in Space or Time, and therefore by that very fact isolated from other objects. Space and Time are forms of perceptive knowing, and, as principles of individuation, impose upon the objects existing in them a character essentially different from the nature of general conceptions. It may as well be admitted that this difficulty is a very serious one. I am not sure that any answer can be found which would be completely satisfactory. At any rate, to discuss the question fully would carry me beyond the limits of the present paper. It would, of course, be wrong to say that the presence or absence of Time and Space does not affect the nature of our experience. It must not be forgotten, however, that perceptive experiences are never *purely* spatial and temporal. That is, *mere* coexistence and *mere* sequence are both abstractions. If Perception were the result of a purely passive apprehension of the 'given,' it might conceivably be described wholly in terms of external space and time relations. But

what we call our perceptive experience, in so far as it yields us real knowledge, has already got beyond the externality of mere coexistence and sequence to the apprehension of necessary relations between objects. That is, Perception is a form of knowing *only in so far* as the synthetic activity of intelligence breaks down and destroys the isolation which belongs to objects as in Time and Space. Without this act of Synthesis, Space and Time themselves could never be apprehended. "The consciousness for which there is Time, has begun a process which tends to abolish Time."[1] It is not, however, *real* Space and Time, *i.e.*, Space and Time as sources of possible intelligible relations, which are thus removed, but the externality and isolation which belong to abstract Space and Time. We conclude, then, that even in Perception the elements of knowledge never fall wholly outside each other. In so far as objects are *known* as in Space and Time, they tend to cohere in an intelligible system. When, in the process of knowledge, we pass from Perception to Conception (if, indeed, it is possible to draw any dividing line), we follow the same course upon which we are already embarked. That is to say, Thought continues the process of unifying experience, already begun, by transforming what at first sight appear to be purely external relations, into relations of organic necessity.

It still remains to inquire what conclusions regarding the possible *extent* of knowledge naturally follow from the view here advanced. It has been found possible to trace Kant's limitation of knowledge to the inadequate manner in which he conceived the nature of synthetic intelligence. As we have seen, Synthesis was supposed to be analogous in nature to processes of material construction. Where the appropriate matter was not at hand, no object of knowledge could possibly result. If, however, we substitute for this conception the notion of an internal transformation, or interpretation of a datum in the sense already described, it is clear that the arguments of the Dialectic will no longer apply. Nevertheless, it is well to remember that these arguments completely refute the Dogmatism

[1] Bosanquet, *Logic*, vol. I, p. 267.

against which they were directed. For Dogmatism sought to forsake completely the field of experience, in order to pass to something entirely different from it. From what has preceded, it is evident that the nature of Thought affords no justification of any absolute *transition* which leaves its data behind. The experience which forms the starting-point of a process of thinking, undergoes reconstruction and transformation, but passes over in its altered form into the result. An inference does not involve a passage *from* premises *to* a conclusion, but in *thinking* the premises the latter is already present.

To admit, however, that it is impossible for Thought to get beyond experience, is by no means to limit knowledge to sense perception. For if we think at all — and without thinking no knowledge is possible — we must, *ipso facto*, go beyond the given and reach results which are not capable of being expressed in the form of sensuous particularity. Although no knowledge can transcend experience, all knowing transcends mere perception.[1]

When we have once got beyond Perception, however, I do not see how it is possible to fix any limits to the possible extent of knowledge. One's ability to go on progressively determining and interpreting the nature of reality, will obviously not depend upon the quantity of the datum. For, as has often been remarked, to fully exhaust all the relations of a single object, would be completely to understand the universe. The possibility of advance will be rather conditioned by the capacity of thought to discover the incompleteness of any conception at which it has arrived, — that is, by its power of bringing to light, by any means, new differences or aspects which demand a more adequate mode of interpretation. The possibilities of thinking,

[1] "What men call the proofs of God's existence are, rightly understood, ways of describing and analyzing the native course of the mind, the course of *thought* thinking the *data* of the senses. The rise of thought beyond the world of sense, its passage from the finite to the infinite, the leap into the supersensible which it takes when it snaps asunder the chain of sense, all this transition is thought and nothing but thought. Say that there is to be no such passage, and you say that there is to be no thinking." — Wallace's translation of Hegel's *Logic*, p. 103; Hegel, *Werke*, Bd. VI, p. 107.

then, with which the range of knowledge is coincident, occupy no definitely bounded field like that which marks the sphere of possible perceptions. And it follows, further, that reality is not divided, by any such line as that which Kant drew between phenomena and noumena, into a knowable and an unknowable portion. Instead of supposing that certain parts of the real world may be fully known, while others are completely beyond cognition, it must rather be maintained that our knowledge is nowhere complete, but that reality is accessible to thought at all points. The history of Science and Philosophy will then indicate the various stages through which thought has successively passed, in the attempt to determine more and more completely the nature of that which is.

J. E. CREIGHTON.

GRAECO-LATIN AND GERMANIC ART.

THE arts[1] of the Germanic races differ markedly from those of the Greek and Latin races, both as to the relative importance and cultivation of the different arts, and as to the details in the cultivation of each individual art. The Greeks, for example, excelled especially in sculpture, whereas the Germanic races have accomplished but little in this direction. The latter, on the other hand, have devoted very much of their energy to music, which they have developed to a very high standard, while with the ancient Greeks and Romans music was comparatively simple and undeveloped, and hardly existed at all as a separate art. French and Italian music differs from Germanic music in many respects, among which may be mentioned the less use which the former makes of counterpoint, and its almost entire neglect of instrumental music. A fundamental difference between Germanic and Graeco-Latin literature is found in the tendency of the former towards romanticism, and of the latter towards classicism. The greater adherence to the unities of time, place, and action, shown in Graeco-Latin when compared with Germanic dramas, is another such difference. In painting we also find a difference between the races, inasmuch as in the paintings of the Germanic artists there is less attention paid to form and grouping than in those of the French and Italians; and in architecture, finally, the complexity of Germanic, compared with the simplicity of Greek and Latin buildings, furnishes us with another such difference.

Among all these differences and distinctions, is there one fundamental distinction, or are there several, of which all or most of the others are merely varieties? I think there are two such, and they may be formulated as follows. (1) Germanic

[1] By 'arts' is meant only the five most important arts, namely, music, literature, painting, sculpture, and architecture.

art-works offer to the mind of the enjoyer more objects simultaneously than do Graeco-Latin art-works. By an 'object' is meant here anything that can be an object of consciousness. In this sense the melody of a musical composition, or the thought suggested by a poem, is an object, just as much as a figure in a painting or a pillar in a building. (2) Graeco-Latin art-works depend for their effectiveness at any moment, more than do Germanic art-works, on what they immediately present to the enjoyer at that moment; while Germanic art-works depend for their effectiveness, more than do Graeco-Latin ones, on the relations or connections between what they immediately present and something not thus immediately given. These connections depend on association, comparison, and so forth, and may be connections with preceding parts of the same art-work, or with previous experiences of the enjoyer.

These two principles run parallel with each other to a great degree, one often being the means by which the other finds application. Thus, since the effectiveness of Germanic art-works depends greatly upon the connections between that which is immediately presented and that which is not thus presented, such art-works often offer to the enjoyer immediate material which has many such connections; whereas Graeco-Latin works more often offer merely the immediate material, with few or no such connections. In other words, the Germanic art-works, in such cases, offer more objects to the enjoyer simultaneously than do the Graeco-Latin works. Again, where many objects are presented simultaneously in an art-work, there are more possibilities of connection of these objects with past or succeeding parts of the same work. The greater number of objects which Germanic art-works offer to the enjoyer simultaneously, is thus often the cause of the fact that the connections or relations of certain parts of these works with other parts are increased in number and brought into greater prominence.

These two distinctions are found, not only between the art-works of the Germanic and Graeco-Latin races, but also between those of the ancient Graeco-Latin and the modern

Latin, that is, the Romance races. The Romance works of art resemble those of the Teutons, when compared to the works of the ancients, and this is just what we should expect to find; for the modern Latins are mixed to a considerable degree with the Teutons, and it is but natural, therefore, for their arts to show some Teutonic characteristics. In brief, we may say that our two principles are found to hold, first, between Germanic art and ancient Graeco-Roman art; second, to a less degree, between Germanic art and Romance art; and third, to a still less degree, between Romance art and ancient Graeco-Roman art.

Most clearly, perhaps, are the distinctions shown in music, where they may be traced in various ways, — among which are the great use of counterpoint in Germanic music, the neglect of purely instrumental music by the Romance nations and its cultivation by the Germans, and the difference in treatment of the opera by the Germans, on the one hand, and the French and Italians, on the other. Germanic music has always been characterized by its great use of counterpoint. Indeed, counterpoint was developed and perfected almost entirely by a Germanic nation, the Dutch, while the two greatest exponents of strictly contrapuntal music, Bach and Handel, were Germans. To the Graeco-Latin nature, on the contrary, counterpoint has always been rather foreign. It was totally unknown to the ancient Greeks and Latins, and it has been used but sparingly by the French and Italians.

Now, contrapuntal music, being music in which two or more melodies exist side by side, offers to the hearer more objects, simultaneously, than homophonous music. For in the latter one hears but one voice or melody at a time, or one melody and its harmonic accompaniment. In contrapuntal music, on the contrary, there are at least two voices or melodies, and often more, at a time, and frequently a rich harmonic accompaniment in addition; that is, more objects are offered simultaneously to the hearer than in homophonous music. Our first principle thus finds a good illustration in music, through this great use of counterpoint by the Teutons.

The second principle also finds an illustration here, since the effectiveness of contrapuntal music is due greatly to the repetition and variations of the same musical themes and phrases in the same composition. The value of such themes or phrases is greatly due to the fact that they are recognized as themes or phrases occurring in previous parts of the composition, or as similar ones; in other words, it is due greatly to the relations of the themes or phrases, immediately given, to previous ones. The effectiveness of homophonous music, on the other hand, is, *caeteris paribus*, due more to that which is immediately given, and not so much to the kind of relations mentioned above. It is due greatly to the immediate effect of the melody, and of the tone-quality of the voice or instrument rendering that melody. This is true of French, and also, in a more marked degree, of Italian opera, — that species of music which embodies some of the best musical efforts of the Latin races. Here rich orchestration, contrapuntal development of themes, action, dramatic truth, are again and again sacrificed merely for the sake of fine melodies, which are to please by their own immediate effect and by the immediate effect of the tone-quality of the voices which sing these melodies. In German opera, on the contrary, greater importance is attached to the orchestra, and more use is made of counterpoint. Greater importance is also attached to the connection between the words and music. While in Italian opera the music is often very little expressive of the sentiment of the words, in German opera great care is taken to make the two correspond. Finally, there is in German opera more dramatic truth and a more logical development of the plot. This is the case especially in the music-dramas of Richard Wagner.

All these facts about opera are illustrative of both our principles. Whereas in French and Italian opera the effectiveness, as stated above, is due principally to that which is immediately given, in German opera it is due more to the relations between the words and the accompanying music, and to the relations between the words and music at any one

moment and the words and music of preceding parts of the opera ; that is, it is due more to the relations of that which is immediately given to that which is not thus given.[1] Again, through all these relations as well as through its greater use of counterpoint, German opera presents more objects to the hearer simultaneously than does French or Italian opera. This can easily be shown by a comparison of any representative Italian opera with one of Wagner's music-dramas. In the latter, it may be said, more objects are offered the enjoyer than in any other form of art. The listener has often presented to him at the same time melody (or recitative), poetic words, dramatic action, an elaborate accompaniment in the orchestra (in which several themes and instrumental tone-qualities are often to be distinguished at once), the relations of the orchestral themes to the words and actions on the stage, and the relations of these words and actions to preceding words and actions.

Our principles apply equally well in the case of purely instrumental music, which is a form of music that has been cultivated almost exclusively by the Germans. One of its peculiarities, as compared with vocal music, is the complexity of the forms in which it is often written, of which the symphony, quartet, and sonata are examples. Such complex forms are built up of many themes and parts, which succeed each other according to certain rules. A mere consciousness of each theme and part as it occurs will not suffice for a thorough appreciation of the music ; besides this, the hearer must have a consciousness also of the relations of those themes and parts. He must, whenever a theme is repeated, not only hear it, but he must be aware that it is the same theme he heard before, and often must also remember in what part of

[1] This is true, not only where the relations of present parts of the opera to past parts are noticed, but often also where the relations of the words and actions to the accompanying music are noticed. For these words and actions, together with the music, are generally not perceived in exactly the same moments, but rather in quickly succeeding moments. The words are heard, or actions seen, and a moment later the correspondence of the music to the same is noticed ; or, *vice versa*, the music is heard and then the correspondence of the words and actions to it is perceived.

the composition it occurred. Much more of the effectiveness of such music is naturally due to the connections between that which is immediately given and that which is not thus given, than is the case in vocal music, with its simpler forms. And this is especially true of the instrumental music of the great German masters — which is the highest form of Germanic music — as compared with the great French and Italian operas, which represent the best musical efforts of the Romance nations.

All this is in favor of our two principles, so far as Germanic and Romance music are concerned. These principles apply even more forcibly, however, when we come to compare Germanic with ancient music. For in ancient music harmony was almost entirely, and counterpoint altogether, unknown. This music was confined almost wholly to the progression of a single voice at a time, and there was in it no complexity of form. Under these circumstances it was, of course, impossible to offer many objects simultaneously to the hearer, or to offer him objects with many relations to other objects. This, it would seem, from our slight knowledge of ancient music, was possible even less than in Romance music ; so that our principles may be said to hold in a slight degree, also, between Romance and ancient music.

We pass, now, to a brief consideration of the other arts. Alliteration and rhyme, through their cultivation in the poetry of the Germanic and Romance nations and their absence in the poetry of the ancients, furnish illustrations of our principles, so far as the literature of these nations is concerned. For both alliteration and rhyme depend for their effect on relations of similarity between certain immediately given and certain previously given letters or words ; and, furthermore, the recognition of these relations furnishes additional objects to the enjoyer which are not given by verse without alliteration and rhyme. Metaphors and allegories also prove that our principles apply in the case of Germanic and Romance as opposed to ancient poetry. For both were more numerous in the former than in the latter, and in the appreciation of both it is necessary to grasp, not only the literal meaning, but also

the relation between this and the figurative meaning, which latter is not given directly.

A better illustration, and one which holds between Germanic and the whole of Graeco-Latin poetry, and also between Romance and ancient poetry, is afforded by a consideration of the drama. English and German dramas, through their greater number of characters and consequent greater number of complications, offer many more objects to the enjoyer simultaneously than do Graeco-Latin dramas. This they do also through the several plots which they often develop on the stage at the same time. Again, on account of these numerous complications and plots, they present to the mind more relations between the action immediately going on and past or future action than do Graeco-Latin dramas. The infringement of the unities of time and place has the same effect, for by this infringement relations are brought about between actions immediately going on and actions in other times and places, such as would not be possible if the unities were observed.

The best instance of our principles, however, is the tendency of Graeco-Latin literature towards classicism and of Germanic literature towards romanticism. Classic works depend for their effectiveness, much more than romantic works, on what they immediately present to the enjoyer, while romantic works depend more on relations between that which is immediately and that which is not immediately presented. Thus classic works lay great stress on beauty of form and style, while often in romantic works but little attention is paid to these. The latter are effective more by means of deep symbolical meanings, thoughts about bygone times and distant lands, and reminiscences of past personal experiences of the enjoyer, which are suggested by that which is immediately given. And since these suggested objects are additional to those immediately presented, romantic works, *caeteris paribus*, offer more objects to the enjoyer simultaneously than do classic works.

It is evident that our first principle holds in architecture, if we compare the simplicity and sparsity of decoration, and the moderate size of Greek, Roman, Renaissance, and even Rococo

buildings, with the immense size of Gothic cathedrals, their innumerable pinnacles, buttresses, columns, and statues, their wood-carved pulpits, glowing windows, and symbolical forms. Not only the first principle, however, but also the second here receives an illustration. For Gothic cathedrals, on account of the many objects they offer, cannot so easily be taken in at a glance as Graeco-Latin buildings. Their different parts must be viewed successively, and in this way the effect of any one part may depend largely upon its relation to other parts previously seen. This is the case, for example, when we view the different parts of a cathedral in which the upward tendency is manifest. Some of these are seen in one moment, some in the next, and so on. Those which are seen first, however, are not entirely forgotten while the later ones are receiving attention. They exist in the mind as a kind of 'fringe,' and their similarity to the later ones modifies materially the effect which these would make by themselves. They aid greatly in producing that sublime consciousness of upward striving which these cathedrals give.

Less clear, perhaps, than in architecture is the application of the principles in painting, although here also they are easily traceable. As an illustration of the first principle, we may take the paintings of the old German and Dutch masters, with their many accessories and their fine detail-work, and as an illustration of the second principle the expressive portraits of Dutch and English masters, in which the whole life and nature of a person is often suggested to us. Another instance of the second principle can be found in the didactic nature of many German and English paintings. In these the picture is not meant to please in itself, but through its reference to a moral truth. When we compare with all this the simplicity and the beauty of form and coloring of Italian pictures, qualities which appeal immediately to the mind, we must admit that in painting also the same differences are to be met with which exist in the other arts.

Coming now to sculpture, we find that, where the Germanic races have made extensive use of this art, they have done so

in ways which would enable them to present many objects simultaneously to the observer. This is shown, for example, in Gothic when compared with Grecian sculpture. The latter, being an independent art, often offered only one or two figures to the eye, whereas the former, being indissolubly connected with Gothic architecture, offered its figures in connection with all the other features of the buildings they adorned. Furthermore, these figures were often so numerous as really to overload certain parts of the buildings, being often crowded in above the portals of cathedrals, for example, to the number of one hundred or more. The most characteristic feature about sculpture, however, in this connection, is the very slight cultivation of the art by the Teutons; and this brings us to the comparative excellence of the different races in the different arts. The art in which the Germanic races have especially excelled is music. In literature, also, they have accomplished much, having at least equalled and probably surpassed the Graeco-Latins in this respect. The latter, on the other hand, have excelled in painting and architecture, and more especially in sculpture. Let us endeavor to ascertain whether it is not possible to throw some light on all this by means of our two principles.

Music and poetry[1] are the two arts which from their nature are effective largely through the relations between that which is immediately, and that which was previously, presented. For the works in these arts are presented to the enjoyer, not all at once, but in successive moments of time, and that which is given at any one moment is dependent thus on its relations to that which was given in previous moments. In painting, sculpture, and architecture, however, the case is different. Works of these arts may be presented in single moments, and the enjoyer may simply dwell, later, on that which was given him in the first moment. Thus a bust, a portrait, or the front of a Greek temple when viewed from a distance, may be enjoyed as a whole by simple perception, that which is seen

[1] 'Poetry' is here taken in its widest sense, as including all artistic productions in literature.

at any one moment not being dependent on something seen before. From all this we might naturally expect (according to our second principle) that the Germanic races should have devoted themselves more to music and literature than to the other three arts, and that the Graeco-Latin races should have excelled in the latter. This we find borne out by the facts. We might also expect that, of the three latter arts, the Teutons should have cultivated painting and architecture more than sculpture. For in the two former it is easier to offer many objects simultaneously to the enjoyer, since it is easier to paint a picture with many figures, or to erect a building with many elements that may be regarded as separate objects, than it is to hew elaborate groups out of marble. And here again our expectation is borne out by the facts, for sculpture is indeed the art in which the Teutons have accomplished least.

We have seen, now, how our principles are illustrated in the most various ways in the different arts. It might perhaps be objected that we have simply collected a number of cases which confirm these principles, and that others might also be found which would contradict them. It is to be noticed, however, that most of these illustrations of the principles are based on distinctions in the arts which are themselves important and fundamental, as, for example, the romanticism of Germanic literature as opposed to the classicism of Graeco-Latin literature, the great cultivation of counterpoint in Germanic music and its neglect in Romance music, and the complexity of Gothic cathedrals when compared with the simplicity of Greek and Italian buildings. Surely, principles which comprehend and explain such important distinctions between the arts, may be regarded as applying to those arts as a whole.

These principles, representing two very fundamental distinctions between Germanic and Graeco-Latin art, are important, even if we should gain no further knowledge from them. If, however, they should throw some light on the nature of the minds of these races, — if they should show us a fundamental distinction between those minds, — then, indeed, they would be

much more important still. And this it is very natural for us to expect from them. For the arts of a people depend perhaps less than any of its other institutions on external uncontrollable circumstances ; they are, more than the other institutions, a voluntary product, and they ought, therefore, to show more clearly the mental nature of the people.

What, now, would be the most natural inference to make as to the mental nature of the Germanic races, in whose arts many objects are offered simultaneously to the enjoyer? Obviously, one would say that the state of mind in these races, in the enjoyment of their arts, was typical also of their normal state of mind. One would say that, just as in his art the Teuton has more objects presented to his mind simultaneously than the Graeco-Latin, so also normally, in everyday life, he has more objects in his mind simultaneously. Since, however, it is possible for only one, or, at most, very few objects, to exist definitely in the mind at any one moment, it follows that we must be conscious of all other objects which are in our minds at that moment in a vague, indefinite way. These other objects, in fact, form a kind of 'penumbra' or 'fringe' (as Professor James would call it) around the foremost objects in the mind. The statement, therefore, that the Germanic mind has more objects in it simultaneously than the Graeco-Latin mind, might better be put that the Germanic mind has a larger 'fringe' than the Graeco-Latin mind. We can arrive at this conclusion also by means of our second principle. Germanic art-works, as we saw above, present to the enjoyer immediate material that has more relations with that which is not given immediately, than is the case with the immediate material presented by Graeco-Latin art-works. Now it is just the "consciousness of this halo of relations around the image [in the mind]" that constitutes the so-called 'fringe.' And art-works which offer immediate material (which corresponds to the 'image' in the quotation above) with many of the above-mentioned relations, require the exercise of a larger fringe in the mind than do art-works with fewer of these relations. From the nature of Germanic and Graeco-Latin

art-works, we can thus conclude that the Germanic mind in general has a larger fringe than the Graeco-Latin mind.

We have now in two ways, by each one of our principles, arrived at the same conclusion regarding the Germanic and the Graeco-Latin mind, and we have at the same time found the common root of the two principles. If we want to give one general formula for the differences between Germanic and Graeco-Latin art, we can say that the former calls into play a larger fringe in the mind than the latter. It might perhaps be objected to this statement, — that the distinctive features of Germanic and Graeco-Latin art are due to a difference of fringe in the minds of these races, — that many of these features are the result of outside accidental influences; that the peculiarities of Romance art, for example, might have been found also in Germanic art, if the external conditions of the development of the latter had been different, and *vice versa*. To a certain degree this is, of course, true. It was, for example, more natural for the Italians to erect buildings imitative of the classical styles, which had always been before their eyes, than it was for the Germanic peoples, who were not accustomed to seeing such buildings. In this case, however, as in similar ones, the question is only shifted. Why did not the ancient Greeks, when they evolved their style of architecture, evolve a more complex style — one more similar in this respect to the Gothic style of the Northerners? It is very natural to suppose that a difference in the minds of the Greeks and the Northerners enters here, which must be taken into account. It would carry us too far to examine all the distinctive peculiarities of Germanic and Graeco-Latin art, and try to determine to what extent these are due to a difference in mind, and to what extent to mere outside accidental factors. It will suffice to say that there are certain of these peculiarities which seem to depend *wholly* on a difference of mind. Music furnishes us with several of these. Counterpoint was known in Romance countries as early as in Germanic countries. There were no external circumstances, no ancient traditions, to prevent the Romance races from using counterpoint just

as much as the Germanic races, and yet they have not done so. Again, there were no external conditions to prevent the Italians and French from cultivating complex forms of instrumental music, and yet such music has been cultivated almost exclusively by the Germans. And, finally, we see no external reasons why the Germans should have developed opera in a manner so different from the Italians, especially since German opera was at first nothing but an imitation of Italian opera. Evidently all these differences depend on differences of mind, not of external conditions ; and the same could be said also of many other differences between Graeco-Latin and Germanic art. The application of our two principles, finally, is far too universal to be merely the result of accidental external circumstances, that is, of chance. There must be a racial difference of mind to account for it.

We may say, therefore, with assurance, that the Germanic mind is characterized by a larger fringe than the Graeco-Latin mind. Can we say also that it is characterized by a larger fringe than the Celtic mind? A comparison of Germanic and French art would show this statement to hold regarding the Germanic and the French mind, and the Frenchman is partly a Celt, as well as a Latin (and to a lesser degree a Teuton). Is the peculiarity of his art, when compared with that of the Teuton, due only to the Latin nature in him, or is it also an expression of his Celtic nature? Evidently it would be very difficult to decide this question merely from the data already given. We might perhaps come a little nearer to a solution, if we could examine other examples of Celtic art ; but unfortunately we have but few specimens of this. The question will therefore be left undecided here.

If, now, there is such a difference in the mental nature of the Germanic and Graeco-Latin races as that indicated above, we ought to be able to trace it not merely in the arts but also in many other activities of these races. We should, by doing this, explain to a great degree these activities, and at the same time find new verifications of our principles. It is not my purpose here to attempt an elaborate exposition of such

verifications. I shall merely hint at some of them, leaving a detailed consideration for some future essay.

In the first place, our principles, together with the psychological result we obtained from them, would explain the greater love of nature by the Germanic races, when compared with the Graeco-Latin races. Where are there so many objects offered to the mind simultaneously as in nature? And where is there more occasion for the exercise of a large fringe in the mind than in the enjoyment of nature? Half the pleasure derived from a beautiful mountain-scene often comes from a vague wonder as to what lies beyond the mountains immediately seen, which vague wonder exists as a kind of fringe in the mind. The same is true in our enjoyment of a dark forest, a babbling brook, or a wreath of smoke curling up from a distant village. It is the vague thoughts about the mysterious supernatural creatures of the forest, about the whence and whither of the brook, and about the human beings busy in the distant village — thoughts existing as a mere fringe in the mind — that constitute a great part of our enjoyment. And it is perfectly natural that a race with a smaller fringe, like the Graeco-Latins, should take less delight in natural scenes, and should try to arrange nature into regular, unified objects, — as has been done in French gardens and parks.

Our principles would explain also the slowness, deliberation, and hesitation of the Teuton in his actions, when compared with the quickness and vivacity of the Graeco-Latin. For psychology teaches us that the realization of a thought in action depends upon the preponderance of that thought in consciousness. Now, in a mind with a small fringe, that is, with few relations or objects, any single thought can gain preponderance more easily than in a mind with a large fringe or many relations. For in the latter it is more likely that opposing thoughts exist, or will come up, before the thought in question can gain preponderance. The result will be deliberation, and often inaction. In the same way the greater persistency of effort or tenacity of the Germanic races can be explained. For persistency of effort requires consciousness of

the end of effort. This consciousness, however, will often, in fact generally, be a consciousness in the way of a fringe only. Where, as in the Graeco-Latins, the fringe is small, the consciousness in question will often be crowded out, and actions contrary to the end will be the result. Since the Celtic races have quickness and vivacity, as well as lack of persistency, in common with the Graeco-Latins, we have here an additional clue to the nature of their minds. They also would seem to have a smaller fringe than the Teutons.

The greater tendency of the Teutons towards brooding and melancholy, as well as their greater religious consciousness, could also be explained to a degree by the mental peculiarity mentioned above. For brooding and melancholy, as well as religious consciousness, depend largely upon the presence of certain thoughts in the mind as a fringe, and where there is a larger fringe there is also more probability that these thoughts will be present. Even such institutions as the language and national religion of these races could have some light thrown on them in this way, although outside influences, of course, play a great part here, and would have to be taken into account. If, for example, it could be shown that there was more suspension of the sense in Germanic than in Graeco-Latin languages, this would go towards proving our point. For where the sense is suspended in a sentence, the former parts of that sentence must exist in the mind, as a kind of fringe, until the suspension is ended. The extreme length of German sentences, as well as the many modifying clauses and the placing of parts of the verb at the end, would all go to show that there is more of this suspension in Germanic languages. The custom of using auxiliary verbs for certain tenses, in English and German, is another case in point. The subject, however, is a large one, and would need careful study before a final decision could be arrived at. Another, and perhaps one of the most important verifications of our principles, could be found in the peculiarities of Germanic science and philosophy, — in their great depth and comprehensiveness. The complexity of Germanic life and political institutions could perhaps

also be explained, at least in part, by the peculiarity of the Germanic mind which we have indicated. Indeed, the applications of our distinction between the minds of the Teutons and the Graeco-Latins (and Celts) are so numerous and fruitful as to warrant us in saying that we have found one of the deepest and most important mental distinctions between these races.

ALBERT GEHRING.

DISCUSSION.

NON-EUCLIDEAN GEOMETRY AND THE KANTIAN *A PRIORI*.

FROM the days of Pythagoras and Plato down to those of Kant and Herbart the mathematical sciences, and especially geometry, have played so important a part in the discussions of philosophers as models of method and patterns of certitude, that philosophy cannot but be extremely sensitive to any change or progress occurring in the views of mathematicians. Accordingly the philosophic world was considerably startled, not so many years ago, to hear that certain mathematicians and physicists had had the audacity to question the assumptions concerning the nature of Space, which had been consecrated by the tradition of 2000 years and set forth in the geometry of Euclid. The possibilities of non-Euclidean spaces, which were as yet necessarily ill-defined and ill-understood, promptly attracted the adherents of all views for which orthodox science appeared to have no room, and no notion seemed too fantastic to become credible, if not intelligible, in space of four or more dimensions. The mathematicians themselves, who were engaged in elaborating the new conceptions, were too busy or too uncertain of their ground to resist successfully this inundation of crankiness, and the consequent discredit into which the subject fell seems to have killed the general interest in it everywhere but in France. Meanwhile mathematicians proceeded quietly with the work of analysing the new conceptions and of deducing their consequences, and thereby reached a clearer consciousness of their import. The result has been that saner views have begun to prevail, and that the sensational features of the new geometry have been mitigated or eliminated. The question has become arguable without the opposing champions considering each other respectively unintelligible cranks or unimaginative stick-in-the-muds. Not but what the rhapsodical view still periodically finds expression in print,[1] but the tendency of the interesting exchange of opinions which has been going on for the last few years in the French philosophical and scientific journals between MM. Delbœuf, Renouvier, Poincaré, Calinon, Lechalas, de Broglie, etc., seems to me to be decidedly in the direction of agreement based upon a retreat from extreme and extravagant positions on either side. In other words,

[1] *E.g.*, *Monist*, IV, p. 483.

the blare of trumpets which announced and advertised the arrival of the new claimant to scientific recognition is over, the pachydermatous ears of the established conservatism have recovered from the shock, and preparations are being made to assign to the newcomer a definite place in the array of the sciences.

The time then seems to be becoming opportune for attempting to summarize the results of all this controversy, with a view to (*a*) bringing out the most important points established by the new 'metageometry,' (*b*) considering what light they throw on the nature of Space, (*c*) estimating what changes will have to be made in the references to geometry which philosophers have been so addicted to making. It is indeed possible that the attempt is still premature, that the parties are still too bitter to be completely reconciled, that the subject is still too inchoate and chaotic for its full significance to be determined. In that case the present writer would console himself with the reflection that his efforts can at least do no harm. His arbitration is wholly unauthorized, and compromises neither the metageometers nor their opponents. His opinions, although they will be found to have most affinity with the views of Professor Delbœuf, cannot claim to rest upon the doctrine of any great authority on either side, — they are merely the subjective inferences of a spectator with divided sympathies; and if he succeeds in arousing interest and elucidatory comment, his object will have been as fully attained as he is entitled to expect.

I. I shall begin, therefore, by stating a point which the metageometers have not to my mind satisfactorily established, and that is the value of the conception of a *fourth* dimension. I say advisedly "of the conception," for the actual existence, or even the possibility of imagining a fourth dimension seems to have been practically given up. The chief value of the conception seems nowadays to be situated in the possibility of making symmetrical solids coincide by revolving them in a fourth dimension. But this seems a somewhat slender basis on which to found the conception of a fourth dimension, and the same end could apparently[1] also be achieved by means of the conception of a 'spherical' space. Here then, probably, is the reason why of late the fourth dimension has not been so prominent in the forefront of the battle, and why its place has, with a great advance in intelligibility, been taken by spherical and pseudo-spherical *three-dimensional* 'space.'

[1] Cp. Delbœuf, *Rev. Phil.*, XIX, 4 (abstracted in PHILOSOPHICAL REVIEW, III, p. 502).

It is on rendering these latter thinkable that the non-Euclideans have concentrated efforts, and, so far as I can judge, they have, in a large measure, been successful. It has been shown that Euclidean geometry may, nay, logically must, be regarded as a special case of general geometry, and as logically on a par with spherical and pseudo-spherical geometry. It is a species of a genus, and the differentia which constitutes it is the famous "postulate of Euclid," which Euclid postulated because he could not prove it, and which the failures of all his successors have only brought into clearer light as an indispensable presupposition. The non-Euclideans, on the other hand, have shown that it does not require proof, because it embodies the definition of the sort of space dealt with by ordinary geometry; and that in both of its equivalent forms, whether as the axiom of parallels or of the equality of the angles of a triangle to two right angles, it forms a special case intermediate between that of spherical and that of pseudo-spherical space. In spherical space nothing analogous to the Euclidean parallels is to be found; in pseudo-spherical space, on the other hand, not one, but *two* 'parallels' may be drawn through any point. So while spherical triangles always have their angles *greater* than two right angles, the pseudo-spherical triangles always have them *less* than two right angles. Moreover, the Euclidean case can always be reached by supposing the 'parameter' of the non-Euclidean spaces infinitely large. So much for the possibility of a general geometry, including the Euclidean amongst others.

It has also, I think, been shown that the non-Euclidean geometries would form coherent and consistent systems, like the Euclidean, in which an indefinite number of propositions might be shown to follow from their initial definitions. They are, that is to say, thoroughly *thinkable* and free from contradiction, and intellectually on a level with the Euclidean conception of space. They are thinkable, — but (as yet) no more; and this explains their defence against the two objections upon which their more unprejudiced opponents incline to lay most stress. It is objected (1) that there is, *e.g.*, no such thing as a spherical space, only a spherical surface. True; but there is nothing to prevent us from *conceiving* the peculiar properties of a spherical surface as pervading every portion of the space it bounds. We can conceive a spherical surface of a constant curvature making up the texture of space, just as well as the Euclidean plane surface. In the latter case the homogeneity of Space is entire in *all* respects, in the former only in *some*. It is argued (2) that metageometry is

dependent on Euclidean geometry, because it is reached only through the latter. But it is not clear that it may not be logically independent, even though historically it has developed out of Euclidean geometry, and even though psychologically the latter affords the simplest means of representing spatial images.

Theoretically, then, metageometry seems to be able to give a very good account of itself. But it must be confessed that this at present only accentuates its practical failure. It is admitted that Euclidean geometry yields the simplest formulas for calculating spatial relations, and even M. Calinon[1] hardly ventures to hope that non-Euclidean formulas will be found serviceable. Metageometers mostly confine themselves to supposing imaginary worlds, of which the laws would naturally suggest a non-Euclidean formulation.[2] In short, practically the supremacy of the old geometry remains incontestable, because of its greater simplicity and consequent facility of application.

II. I pass on to the second question, the light thrown by non-Euclidean geometry on the nature of Space. In this respect incomparably its most important achievement seems to have been to force upon all the distinction between *perceptual* and *conceptual* space, or rather spaces. On this point both parties are at one, and we find, *e.g.*, M. Delbœuf[3] and M. Poincaré[4] stating the characteristics of Euclidean space and its fundamental distinction from perceptual space in almost identical terms. The former is one, empty, homogeneous, continuous, infinite, infinitely divisible, identical, invariable; the latter is many, filled, heterogeneous, continuous only for perception (if the atomic view of matter holds), probably finite, not infinitely divisible and variable. Both sides agree that our physical world is neither in Euclidean nor in non-Euclidean space, both of which are conceptual abstractions; their dispute is merely as to which furnishes the proper method for calculating spatial phenomena.[5] Thus all geometrical spaces are grounded on the same experience of physical space, which they interpret differently, while seeking to simplify and systematize it by means of the various postulates which define them.

[1] *Rev. Phil.*, XVIII, 12 (abstracted in PHILOSOPHICAL REVIEW, III, p. 369).

[2] *E.g.*, M. Poincaré, *Rev. de Mét.*, III, 6, pp. 641 ff.

[3] *Rev. Phil.*, XVIII, 11 (abstracted in PHILOSOPHICAL REVIEW, III, p. 233).

[4] *Rev. de Mét.*, III, p. 632.

[5] Cp. Calinon, *Rev. Phil.*, XVIII, 12, "Sur l'indétermination géometrique de l'univers."

But if conceptual and perceptual space are so different, have they anything in common but the name? If the former are abstracted from the latter, upon what principles and by what methods does the abstraction proceed?

I conceive the answer to this important question to be, by the same methods as those by which 'real' or physical space is developed out of the *psychological* spaces. For, as M. Poincaré [1] well shows, we form our notion of real space by fusing together the data derived from visual, tactile, and motor sensations. That fusion is largely accomplished by ignoring the differences between their several deliverances and by correcting the appearances to one sense by another, in such a manner as to give the most complete and trustworthy perception of the object. We manipulate the data of the senses in order to perceive *things* (in 'real' space), and at a higher stage the same purposive process yields conceptual space, of course at first in its simplest form, the Euclidean. And (though I have not found this stated) all the characteristics of Euclidean space may be shown to have been constructed in this manner. Just as, *e.g.*, the varying appearances of things to the different senses were ignored in order to arrive at their 'real' place, so the varying and irregular deformations to which they are subjected at different places, when abstracted from, lead to the homogeneity of space. They are slight enough to be neglected, but if they were larger and followed some definite and simple law, they might suggest a non-Euclidean geometry. Similarly, geometrical space is one and infinite, because as soon as we abolish any boundary *in thought*, we can abolish all; it is infinitely divisible, because as soon as the division is conceived of as proceeding *in thought* the same act may be repeated as often as we please. And so on; geometrical space appears throughout as a construction of the intellect, which proceeds by the ordinary methods of that intellect in the achievement of its peculiar purposes. Nor is there anything new or mysterious about the process; no new faculty need be invoked, no new laws of mental operation need be formulated.

III. That the philosophic importance of this result is capital, is surely evident. The *certainty* of geometry is thereby shown to be nothing but the certainty with which conclusions follow from non-contradictory premisses, and in each geometry it flows from the definitions. The certainty with which the sum of the angles of a triangle may be asserted to equal two right angles in Euclidean

[1] *Loc. cit.*

geometry, is precisely the same as that with which it may be shown to be greater or less in non-Euclidean systems.

And this shows that certainty in the sense of intrinsic consistency has nothing to do with the question of the real validity of a geometry. The latter depends on the possibility of systematizing our spatial experience by means of the geometry. Our experience being what it is, we find the Euclidean the simplest and most effective system, alike to cover the facts and to calculate the divergences between the ideal and the actual results; and so we use it. But if our experience were different, a non-Euclidean system might conceivably seem preferable. In short, *as applied*, a geometry is not certain, but useful.

Again, the *necessity* of geometry is simply the necessity of a logical inference, — hypothetical, and in no wise peculiar to geometry. Similarly, the *universality* of geometrical judgments is by no means peculiar to them, but may be explained as arising out of the *methodological* character of the assumptions on which they rest. If we decide to make certain assumptions because they are the most serviceable, we can certainly know beforehand that we shall always and under all circumstances judge accordingly. To expect us to do otherwise, would be to expect us to stultify ourselves. And certainly we have a great interest in upholding the universal validity of geometrical judgments. Is it a small thing to be able to draw a figure on paper in one's study, and on the strength of it, and by virtue of the homogeneity of space, to draw inferences about what happens beyond the path of the outmost sun? Should we not be incredible idiots, if we allowed any cheat of appearances to cajole us into a moment's doubt of so precious an organon of knowledge? It would seem, then, that the chief result of metageometry is to raise into clearer consciousness the nature of the complex processes whereby we organize our experiences, and to assimilate the case of space to our procedure elsewhere.

But it has already become abundantly evident that a view of Space, such as that propounded, provokes conflicts with ancient and venerable views that have long adorned the histories of Philosophy. Among them Kant's conception of the apriority of Space is pre-eminent.

At a cursory glance it might indeed seem as though the new geometry afforded a welcome support to the Kantian position. If Euclidean geometry alone could prove the possibility of synthetic judgements *a priori*, could enrich us with absolutely certain knowledg

absolutely independent of experience, could sustain an all-embracing, though empty, form of pure intuition, surely now that it is reinforced by two or more sister sciences, a boundless extension of our *a priori* knowledge might reasonably be anticipated. Unfortunately it proves a case of 'too many cooks' and the embarrassment of riches, rather than of 'the more the merrier.' To suppose *three a priori* forms of intuition corresponding to the three geometries is evidently not feasible, for they are in hopeless conflict with each other. If it is a universal and necessary truth that the angles of a triangle are equal to two right angles, it cannot be an equally universal and necessary truth that they are greater, according as we happen to be speaking of a Euclidean or of a spherical triangle. Clearly, there must be something seriously wrong about the assumed relation of geometry to space, or about the import of the criterion of apriority. Just as the *de facto* existence of geometry seemed to Kant to prove the possibility of an *a priori* intuition of Space, so the *de facto* existence of metageometry indicates the derivative nature of an intuition Kant had considered ultimate.

And the analysis thus necessitated rapidly discovers the seat of the error. Kant, like all philosophers before and far too many since his time, regards the conception of Space as simple and primary and the word as unambiguous. He does not distinguish between physical and geometrical space, between the problems of pure and of applied geometry. Hence he is forced to make his *Anschauung* an unintelligible hybrid between a percept and a concept, to argue alternately that 'space' could not be either, and to infer that it must therefore be some third thing. The possibility that it might be both never struck him. Still less did he suspect that each of these alternatives was complex, and that perceptual space was constructed out of no less than three sensory spaces, while it was susceptible of three different conceptual interpretations. What Kant calls 'space' therefore is not really one, but *seven*, and the force of his argument is made by their union. Confined to any one of them, the argument falls to pieces. When we see these facts as clearly as the development of metageometry has compelled us to see them, we must surely confess that the Kantian account of Space is hopelessly and demonstrably antiquated and can lend no support to the rest of his system. And should we not henceforth take care to eschew the vice of talking vaguely of 'space' without specifying what kind of space we mean, whether conceptual or perceptual, and what form of each? Even pedagogically, one would think, there can no longer be any

advantage in confusing what is capable of being so clearly distinguished.

It would exceed my limits if I were to try to investigate whether Kant has not been guilty of a parallel confusion between felt succession and conceptual time in his account of the latter, still more were I to discuss whether after the withdrawal of the 'forms of pure intuition' any meaning could continue to be assigned to the Kantian conception of the *a priori*. I shall conclude, therefore, with the hope that some of the many professed believers in the *Transcendental Aesthetic* will not disdain to define their position in face of the development of modern metageometry.

F. C. S. SCHILLER.

REVIEWS OF BOOKS.

Einleitung in die Philosophie. Von Oswald Külpe, Professor an der Universität Würzburg. Leipzig, S. Hirzel, 1895. — pp. viii, 276.

Külpe distinguishes between an introduction to philosophy which consists in presenting a system in outline (in stating the chief problems of philosophy and intimating the solutions which commend themselves to the writer), and one which, ignoring or keeping in the background the writer's own personal views, aims at presenting a bird's-eye view of the whole field of philosophical endeavor of the past and present. Külpe's *Introduction* aims to be of the latter sort. Assuming no previous knowledge of the subject on the part of his reader, he seeks to give him an insight into the development and present condition of philosophy in its various branches. He divides his work into four parts or chapters. In the first he treats briefly of the definition and divisions of philosophy as historically determined; in the second he considers in considerable detail the different philosophical disciplines; in the third he treats, also in considerable detail, the principal directions or tendencies of philosophical thought, and explains the important philosophical distinctions; and in the last he sketches briefly what, on the basis of what has gone before, he conceives to be the true definition and systematization of philosophy.

Chapter I, *Begriff und Eintheilung der Philosophie*, gives us, first, a rapid yet clear account of the various conceptions formed of philosophy in the past and the present. None of these is regarded as in itself satisfactory,—as determined, that is, by the real nature of the subject-matter; they are, rather, definitions of the science as it has been presented in actual systems. An independent attempt at defining philosophy is reserved for the last chapter. Next, attention is called to the fact that just as the definition of philosophy has varied, so likewise have the divisions of the subject, some disciplines formerly recognized as philosophical being no longer regarded as such. The attempt, therefore, to give a systematic and comprehensive classification of philosophical disciplines which would be accepted, is impossible while there is no accepted definition of philosophy itself. After giving, therefore, the more important fundamental divisions of philosophy which have been proposed,

Külpe classifies, for the purposes of his work, the disciplines actually recognized to-day as philosophical into two groups, *general* and *special*, the former treating of the presuppositions, completion, and exposition of the whole field of knowledge, the latter of a particular branch of knowledge. The general philosophical disciplines are metaphysics, epistemology, and logic; the special are the philosophy of nature, psychology, ethics and philosophy of rights, aesthetics, philosophy of religion, and the philosophy of history (including sociology).

Chapter II, *Die philosophischen Disciplinen*, devotes a section to each of the disciplines named. The general disciplines are treated first. After presenting the various conceptions of metaphysics given in the course of the history of philosophy, Külpe declares that the task of metaphysics is to give us a *Weltanschauung*, — a rational and unitary view of the sum-total of reality. Metaphysics as the science of the most general principles or concepts, he identifies with epistemology. Logic treats of the most general *forms* of knowledge. Epistemology treats of the most general *contents* of knowledge. Locke is declared to have been the real founder of epistemology. He it was who, in his *Essay*, first undertook a systematic investigation into the origin, certainty, nature, and extent of human knowledge. Since the sixties of our century the main endeavor of philosophers has been to construct a sound theory of knowledge as the assured basis of all philosophy and science. Epistemology has to critically investigate (1) the possibility of knowledge; (2) the separation of the content of knowledge into subjective and objective; (3) the distinction of the formal and material elements in knowledge; (4) the most general concepts of being and becoming. In addition to investigating these logical presuppositions of *all* special sciences, epistemology has to consider certain special concepts common only to a particular group of the sciences, such concepts, for example, as matter, force, energy, life, the soul. It has also to deal with the relation between psychical and physical processes, etc. It is no wonder that Professor Külpe writes: "Undoubtedly epistemological investigations are among the most difficult in the whole field of philosophy."

The author turns next to the special philosophical disciplines. In treating these (and the treatment is excellent throughout) he is careful to distinguish the properly philosophical problems from the strictly scientific ones connected with them. Take, for example, psychology. A scientific psychology, he finds, leaves unanswered,

while forcing forward for answer, a multitude of properly philosophical problems. The consideration of these constitutes psychology as a department of philosophy, or the philosophy of mind. This has as its task to investigate (1) the epistemological and logical presuppositions of empirical psychology, such as the concept of the psychical subject or individual, psychical causality, the analytic and synthetic and genetic methods, etc.; (2) the fundamental concepts employed in empirical psychology, such as consciousness and the unconscious, the soul and its relations to the body, psychical 'element,' etc.; (3) the general theories of scientific psychology, such as those concerning our ideas of space and time, association, sense perception, etc. As the first modern contribution to such a philosophical psychology Külpe names Rehmke's *Lehrbuch der allgemeinen Psychologie* (1894), and would doubtless have added the still abler work by Professor Ladd on *The Philosophy of Mind* (1895) had he been acquainted with it in time. It is particularly gratifying to find Professor Külpe, who is a thoroughly up-to-date scientific psychologist, as his *Grundriss* abundantly shows, thus frankly recognizing and cordially encouraging the consideration of these wider problems of psychology. His attitude toward these questions is in striking contrast with that taken by some conspicuous cultivators of scientific psychology in this country.

Chapter III, *Die philosophischen Richtungen*, is by far the most important. The author begins with an enumeration of the directions or tendencies of philosophical thought, so far as these relate to the *content* of the various philosophical disciplines treated in the previous chapter. These directions or tendencies of thought are divided into three groups,—metaphysical, epistemological, and ethical. The metaphysical are divided into five subclasses, the first and second having a general, the other three a special significance in the formation of a *Weltanschauung*. The first deals with the *number* of ultimate principles postulated, and the possible conceptions are Singularism and Pluralism. The second relates to the quality, or nature, of the ultimate principles, and as our principles may be either those of being or those of becoming, we have the metaphysical lines of thought relating to being expressed by the terms 'materialism,' 'spiritualism,' 'dualism,' and 'monism'; and those relating to becoming (or causality) expressed by the terms 'mechanism' and 'teleology' (finality). Of the three special metaphysical tendencies, the first may be called the theological, as it relates to the conception of a Supreme Being; and here we have pantheism, theism, deism,

and atheism as rival views presented for our acceptance. The second relates to the problem of freedom, and gives rise to the contrasted conceptions, determinism and indeterminism (freedom). The last deals with the nature of the soul; the acceptance or rejection of a soul-substance giving us 'substantialism' and 'actualism,' and the question as to the primacy of intellect or of will, giving us 'intellectualism' and 'voluntarism.' The character of any particular metaphysical system will be determined by the position which its author takes in these various directions. For example, Külpe characterizes Spinoza as a singularist, monist, mechanist, pantheist, determinist, actualist and intellectualist; Lotze, on the other hand, as a qualified singularist, a spiritualist, a teleologist, a theist, an indeterminist, a substantialist. The tendencies belonging to the five groups may, however, be differently combined in different systems.

The epistemological directions of thought relate, according to Külpe, to (1) the *origin* of knowledge, giving us rationalism, empiricism, and criticism; (2) the validity, or limits, of knowledge, giving us dogmatism, skepticism, positivism, and criticism; (3) the nature of the object or content of knowledge, giving us idealism, realism, phenomenalism. Finally, the tendencies or lines of ethical thought relate to (1) the origin of morality,—intuitionism or apriorism, and empiricism or evolutionism; (2) the ethical motive, — *Gefühlsmoral* and *Reflexionsmoral*, according as the motive is regarded as some form of feeling or of reflective thought; (3) the ethical object, — individualism and universalism; (4) the ethical end, — subjective feeling (hedonism, eudaemonism), or objectivism (perfectionism, evolutionism, naturalism, utilitarianism). To take the same examples as before, Spinoza, in epistemological characteristics, is a rationalist, dogmatist, and realist; in ethical, an autonomist, egoist, objectivist, and as regards the ethical motive, occupies a mediating position; Lotze, on the other hand, accepts criticism, realism, autonomism, intuitionism, altruism, and eudaemonism, while, as regards the ethical motive, he is a *Gefühlsmoralist*.

After thus classifying the directions or tendencies of philosophical thought, Professor Külpe explains and discusses each in turn. His discussions exhibit wide and accurate historical knowledge, are uniformly clear and impartial, and on the whole, show an admirable grasp of the subjects considered. This part of the work we believe would be especially helpful to the beginner, enabling him to get clearly before his mind the great issues in philosophical speculation, past and present.

It is unnecessary to follow in detail Professor Külpe's discussions; but two or three of his positions may be noticed. His brief criticism of materialism (pp. 132–137), in the course of which attention is called to the absolute lack of an epistemological foundation for materialism, is especially good. Of the four competing views, materialism, spiritualism, dualism, and monism, Külpe himself leans toward dualism as on the whole the most probable, since it harmonizes with science and satisfies epistemological and logical demands. The least tenable is materialism; while, next to dualism, spiritualism is regarded as most tenable. The author notices the fact that metaphysical monism is by most of its adherents but a form of spiritualism, and in a note calls attention to the various meanings of the term 'monism.' The brief criticism (pp. 190–193) of the *Actualitätstheorie* which Wundt and others offer as a substitute for the theory of the soul as substance, is worthy of notice. In dealing with idealism, Külpe takes the ground that epistemology is incompetent to decide the question as to the reality of a non-ego. When epistemology has determined the character of the subjective and the objective in connection with the quality of the original content of experience, it has done all that rightly belongs to it. For anything further we must look to metaphysics. In the discussion of rationalism, empiricism, and criticism, we are told that the whole question as to the origin of knowledge is a psychological, and in no true sense an epistemological, question, and that the inquiry into the universal validity and necessity of knowledge belongs to logic. It seems, therefore, rather inconsistent to treat these topics under the head of epistemology.

The closing chapter, *Aufgabe und System der Philosophie*, although very brief, presents some suggestive remarks on the definition and systematization of philosophy.

When one attempts, in so brief a space, to treat so many great subjects as the author does in this little manual, there is danger of losing the sense of proportion and of becoming at times superficial or too abstract. It is too much to say that Professor Külpe has wholly escaped these and other faults of treatment. We notice a tendency toward an unnecessary multiplication of terms and refinement of distinctions. Occasionally, too, there is a lack of precision in statement. For example, speaking of the various forms of the ontological argument for the being of God, the author remarks: "Sie alle kommen darauf hinaus, aus dem Begriff eines Wesens seine Existenz zu erschliessen," — which is correct only when we insert

before *Wesens* the all-important qualifying adjective *allervollkommensten*. But in spite of such defects and others which might be pointed out, Professor Külpe has succeeded in producing an unusually good book of its kind, and one which we would gladly welcome in a good English rendering.

GEORGE MARTIN DUNCAN.

A Short Study of Ethics. By CHARLES F. D'ARCY, B.D. London and New York, Macmillan & Co., 1895. — pp. xix, 278.

The object of this book is, in the author's own words, "to give, *in small space*, an account as well of the metaphysical basis as of the ethical superstructure." Its standpoint is, in the main, that of the late Professor Green, and it follows very closely on the lines of the shorter expositions of Professor Dewey, Mr. Muirhead, and Professor Mackenzie. Mr. D'Arcy's criticism of the latter works is that "all three build without a foundation." To the reader who is familiar with Professor T. H. Green's ethical method, the lucidity of these books is admirable. But the author cannot help wondering whether his enjoyment in reading them would have been as great as it was if he had not previously made the acquaintance of the great *Prolegomena*, a work which "among all modern English contributions" to ethical literature "stands easily first" (Preface). To remedy this defect of the more recent Neo-Hegelian presentations of the subject, Mr. D'Arcy follows Green's example, and devotes the first Part of his book to "the philosophical basis of ethics." Here it soon becomes evident that, in spite of his general adherence to the standpoint of his master, Mr. D'Arcy is rethinking the questions for himself, and does not hesitate, in important particulars, to criticise and to modify the answers given by Green and his disciples. He agrees with Green's metaphysics of knowledge, and re-states his doctrine of the spiritual principle in nature, and of reality as a system of relations. His re-statement does not, in my opinion, add to the persuasiveness of the doctrine: his effort to resolve the sensational matter into the relational form of knowledge meets with no better success than previous efforts of a similar sort. The familiar reconciliation of freedom and necessity produces a like impression. The most valuable chapter of this Part is that in which Mr. D'Arcy parts company with his teachers, and ventures an independent contribution to philosophical theory, — Chapter V, entitled "Community." What he calls "the point of discontinuity in all idealisms" occurs "where the effort is made to distinguish, and at the same time to reconcile,

the human spirit and the Divine. Even Hegelianism, the greatest and most profound of all idealisms, seems to have escaped the difficulty only by avoiding it. By constantly speaking of Spirit as if it were impersonal (instead of personal, as it essentially is), Hegel was able to shift the standpoint of his inquiry from the human to the Divine, and from the Divine to the human" (p. 43). "Nor is Green more successful than Hegel. Profoundly important and valuable as is his discussion of the philosophical basis of ethics, it is impossible to be satisfied with his account of the relation between the spiritual principle in Nature and the spiritual principle in the individual thinker" (p. 44). "Either man is deprived of all real self-hood, or the self in man is identified with God" (p. 45). "The only fair interpretation which can be put upon Green's doctrine is that he identified the self in every man with God. But this is a position which cannot be maintained. Self is no mere abstract principle of unity. Self is the ultimate concrete unit of the cosmos of experience. Self is for every man unique and ultimate. Further, the identification of the self in every man with God involves the identification of all human selves. But since each self is for itself unique and ultimate, this identification amounts to a denial of the essential nature of self-hood. The one instance of a plurality which the self cannot unify, is the plurality of selves. Every person is separated from every other person by an abyss which thought cannot bridge; and any doctrine which leads to the identification of all persons reduces itself thereby to an absurdity" (p. 46).

This inevitable isolation of personality forces us to reconsider our conception of God, and "to believe that, though personal, He is yet more than personal" (p. 47). "It is impossible to end in a disconnected multiplicity. The mind is compelled in spite of itself, if only for regulative purposes, to suppose some principle of unity deeper than the unity of self-consciousness. . . . On the objective side, nature is a whole which integrates all possible experiences. Surely there must be something to correspond on the subjective side? Yet thought contains no principle capable of unifying a subjective multiplicity. It is necessary, therefore, to suppose that there is in God a transcendent principle by which He forms the ultimate bond of union among the multitude of persons" (pp. 47, 48). "As to the mode of the union of all spirits in God we are ignorant, and must remain ignorant as long as our faculties are what they are. The principle which makes the union possible is inscrutable, but the fact of the union must be assumed as the ultimate basis of all coherence, specu-

lative and practical" (p. 48). The candor and modesty of this position are characteristic of the author, as are also its independence and originality. The attitude taken to the contingent is similar. "The cosmos of experience is not a perfect cosmos. It does not form a completely articulated system. It is not perfectly rational. If it were, every element would be necessary. But every element is not necessary. Side by side with the necessary we must recognize the contingent" (p. 50). This implies that "the world-constituting activity of the self is subject in its operation to some limiting influence." "This limitation must be traced . . . to the existence and operation of the multitude of spirits, each of whom, in the exercise of his self-determination, imposes limits upon all the rest. Further, it must not be forgotten that above this multitude of spirits there is one who is Spirit, and more than Spirit, one who is the ultimate source of all being, subjective and objective" (p. 51). The ethical implication of this doctrine of the relation of persons to one another and to God is of fundamental importance. "All persons limit one another, and all persons are one in God. Hence all persons form a *community*. The end of one is the end of all. The end of the universe is the end of man. The Absolute Good is the true Good for every person" (p. 52).

The application of this principle to the problem of altruism is particularly important, because it constitutes the author's most serious ethical departure from the standpoint of Green. "The fact remains that reason cannot escape the circle of the self. Every man is, as a reasonable being, his own end. Every act of will exemplifies the truth of the assertion. What the man seeks in the effort of will is some end which he selects as his personal good, some object with which he identifies his personal satisfaction. The will is by nature egoistic. It is self-objectifying. Thus man is an end to himself. It does not follow, however, that because every man is an end to himself, therefore every other man is an end to him. The scientific use of reason provides no principle capable of proving such a proposition. On the contrary, the reason of every man exalts him to a supreme position, a position of unique and commanding importance. . . . Mr. Kidd is therefore right when, in his *Social Evolution*, he describes reason as essentially anti-social. Why should the individual subordinate his private interests to the interests of the community? Why should he deny himself pleasure that others may benefit? No purely reasonable answer can be given to these questions. If they are to be answered at all, the answer must, to

some extent at all events, transcend reason, or, as Mr. Kidd puts it, be ultra-rational" (pp. 58, 59). This is surely an exaggeration of the facts. If reason needs the energy of feeling to execute the unity which it has planned, it is no less true that feeling needs the illumination of reason to teach it the nature of that unity. The interests of the moral individual, since they are personal interests, are not merely private but public. The same rational insight which dictates the subordination of the partial and temporary to the total and enduring interests of the self, dictates the subordination of the private to the public interests of the self. The partiality of the individual to himself is the partiality of feeling, not of reason: reason is, by its very nature, impartial, and therefore a social rather than an anti-social principle. In this point Mr. D'Arcy seems, in parting company with Green, to have lost sight of a great truth which we can ill afford to lose. Probably he has been misled by a confusion of the question of the *ratio* with that of the *causa*, of the final with the efficient cause, in spite of his own caution (p. 200) that "ethics, as a science, deals not with the discovery of causes, but with the discovery of ends."

From the philosophical standpoint thus described, Mr. D'Arcy proceeds, in Part II, to sketch an "Outline of Ethical Theory." This part, constituting the body of the book, is an admirably clear and impressive presentation of the central doctrine under its most important aspects. If space permitted, attention might be called to several fresh and striking statements. The whole gains greatly by the preparation laid for it in the metaphysical discussion of Part I. Perhaps its most valuable and interesting features are the recurring insistence upon the religious basis and significance of morality, and upon the social and objective character of the good life. The fine ethical spirit and delicate insight of the author are apparent on every page.

Part III contains an all too brief "Criticism" of other ethical theories. Having first built up his own position independently, the author desires, in closing, to come to terms with opposing views. The best chapter is, perhaps, the third, on "Evolutionary Ethics."

JAMES SETH.

Tempérament et caractère selon les individus, les sexes, et les races. Par ALFRED FOUILLÉE. Paris, Félix Alcan, 1895.—pp. xx, 378.

In the preface to this volume, the author points out that the laws of abstract psychology can no more account for the special character

of any given person than the general laws of physics can explain the physical peculiarities of different individuals. The stimulus which moves one man has no influence whatever on another. To account for the individual difference thus manifested, is, according to M. Fouillée, the problem with which the science of Character has to deal. Hitherto, he continues, the writers on the subject have contented themselves with definition, description, and empirical classification. The time has now come, however, for bringing the scattered materials together and attempting to show that it is possible to sketch in the first outlines of a scientific theory. The aim of the present work is to present a theory of this sort, based on biology and psychology.

The conception which the author wishes most of all to introduce is that of Evolution. The natural disposition of each individual is the result of a long development, and at the same time the point of departure for a new advance brought about by the individual himself. If we examine more explicitly the elements that are concerned in the building up of character, we find that natural disposition is due to race, sex, and the peculiar constitution of the individual. This natural disposition, however, is but the starting-point of a new development. It is modified, in a passive way, by the environment, and, in an active way, by the reaction of intelligence and will. It is this latter reaction which constitutes Character proper in opposition to Temperament, which is entirely a matter of physical constitution. From this general statement, it will be seen that the book falls naturally into four parts, dealing with Temperament, Character, Sex, and Race, respectively.

In attempting to determine what Temperament is, M. Fouillée goes for help to biology. All anatomical structures, on the one hand, and all physiological functions, on the other, are now interpreted as changes, constructive and destructive, in the living matter itself. These two series of changes may be combined in various degrees, and the particular way in which they are related in any given case accounts for the temperament of the individual. Thus the old division of temperaments into Receptive (*sensitif*) and Active (*actif*) is seen to have a natural basis, for while feeling and action each involve both constructive and destructive processes, still, in general results, feeling is favorable to integration and action to disintegration. Each of the classes mentioned has two divisions, since psychical reaction, either in the way of feeling or action, may be prompt without being intense or intense without being prompt. No concrete

individual, the author is careful to say, is the realization of any of the four abstract types which thus result. In any given instance, two or more types will be found in combination. Further, it must be remembered that the perfect and harmonious temperament is one in which there is a proper balance between the constructive and the destructive elements.

In the section that deals with Character, M. Fouillée sets out by demonstrating that intellect is not a superfluous accompaniment of the other psychical processes. The lowest organic being manifests a *preference* for one form of nourishment rather than another. But before one thing can be preferred to another, the two must be *cognized* as different from one another. The intellectual element, therefore, is present and active at the earliest stage. Further, Darwin has shown that in the struggle for existence intelligence is a condition of supremacy, and hence has developed more and more. If it were merely a useless concomitant, this would not be the case. Having thus proved that intellect is a primary and essential element, the author proceeds to classify characters according to the predominance and varying relation of the three great psychical factors — intellect, feeling, and will. This classification, he claims with justice, is more fundamental than the classification according to the objects to which our tendencies are directed. Objects are far from exhausting the subjective content of our tendencies, of which they are simply the points of application, the external occasions. What escapes in the classification by objects is precisely what is most important, namely, the tendencies themselves.

The influence of Sex on temperament and character is discussed from the point of view of Geddes and Thomson's theory, that Sex is due to the preponderance of the constructive or destructive elements in the organism. The former is more prominent in the female, the latter in the male. By means of this biological principle the mental and moral characteristics of the two sexes are deduced. Woman represents the conservative element, while in man the active, restless, disintegrative element is predominant. Hence, in comparison with men, women are calmer, more patient, less courageous, more emotional, less highly developed intellectually. On this view it is evident that the two sexes must be regarded as essentially different. They are complementary, however, and the one has the same worth as the other.

The chapters devoted to the determination of character according to race are the least satisfactory in the book. After pointing out

that in myths, religious customs, etc., we have evidence of the essential unity of the human spirit, M. Fouillée tries to explain how the differences observable between the various races have originated. The Negroes and the Orientals are then hurriedly characterized, and the Whites are dismissed with the remark that every one knows all about their essential traits. The author is not afraid lest the Eastern peoples should overrun Europe and dominate the world. The Whites are intellectually superior, and intellect can always devise means for the maintenance of its supremacy.

Though this book is admirable in many respects, the general impression which it leaves is not altogether satisfactory. It is written in a clear and interesting manner, and the acuteness of the author is everywhere apparent. But, though it contains nothing that is altogether irrelevant, it contains a good deal that might with advantage have been compressed. In this respect it does not compare favorably with M. Paulhan's compact treatise, *Les caractères*. Further, although M. Fouillée has attempted to go beyond mere empirical observation and classification, he cannot be said to have worked out a scientific theory in any very systematic way. The 'given' element in character is regarded as due to race, sex, and individual constitution. The last is dependent, presumably, on the relation existing in the organism between the constructive and destructive elements. But Sex also is determined by the same relation, so that on the author's principles two of the factors which he enumerates should fall together. At all events there is a difficulty here which should be taken into account. Moreover, Temperament and Character are treated altogether independently of one another. The two should surely be brought into some relation, for both must be united in any concrete individual. It might be added that it is not obvious why there should be a classification of characters according to the predominance of intellect, feeling, or will, if character "is the reaction of intellect and will" on the 'given' (p. xvii). Indeed, it is very difficult to get any notion of what the author understands by Character and Temperament respectively. This fundamental distinction is rather indicated than sharply outlined. The book, in short, though interesting and suggestive, is somewhat loosely put together. Still it is an advance on previous works dealing with this subject, and should be welcomed accordingly.

DAVID IRONS.

Philo about the Contemplative Life, or, The Fourth Book of the Treatise concerning Virtues. Critically edited with a defence of its genuineness. By FRED. C. CONYBEARE, M.A., Late Fellow of University College, Oxford. Oxford, at the Clarendon Press, 1895. — pp. xvi, 403.

The author tells us that this is the first volume on Philo which has issued from the University Press in this century, important as Philo has been to generation after generation of Catholic teachers. One must not, however, conjecture from this statement in the author's preface that Philo has been ignored all these years in England. Within a very brief period we have had the admirable works of Drummond, Hatch, and J. Rendel Harris, and the Germans have not been idle. Cohn, Cumont, Wendland, Zeller, Wolff, Bernays, and Freudenthal, have all within the last decade and a half made more or less important contributions to the Philonean literature. The volume before us is concerned only with that tractate, amongst the voluminous works of Philo, known as the περὶ βίου θεωρητικοῦ, being the fourth book in an account of his embassy to Gaius, which series of books was entitled περὶ ἀρετῶν. The Greek text of the tractate occupies upwards of 20 pages, but to examine these minutely it has required upwards of 400. We have an *apparatus criticus*, exhaustive philological notes and general commentary, a very detailed excursus in defence of the Philonean authorship, excerpts from the *Historiae ecclesiasticae* of Eusebius, from the Armenian Version, from the Old Latin Version, and a set of indexes, which by their fulness and painstaking accuracy ought to fill every reader's heart with gratefulness and delight. The work is altogether an admirable piece of bookmaking.

The chief concern of the author is to rescue this treatise from the hands of the German critics, who had lately concluded it did not belong to the Philonean writings, and to restore it to Philo, where he conceives it rightfully to belong. Some thirty years ago Grätz, in his *History of the Jews*, had expressed strong doubts about the Philonean authorship and in fact criticised Zeller for accepting the treatise as authentic. But Zeller (replying in the second edition of his *Philosophie der Griechen*) did not regard Grätz as having made out his case. However, after Lucius published his work on the Therapeutae (*Die Therapeuten und ihre Stellung in der Geschichte der Askese*, Strassburg, 1879), Zeller was convinced and faced about. In his third edition (III, ii, p. 307, note) he accepts the position of Lucius as in the main correct. And so with the unauthenticity of Philo's

tractate on the *Contemplative Life*, the sect of Therapeutae, therein and nowhere else described, vanishes as the dream of some ancient literary forger.

At the time of Jonathan the Maccabean (160 B.C.), there were three sects of the Jews: the Pharisees, Sadducees, and Essenes. The last named was a religious order, similar to the monastic orders of the Church, and had at the beginning of the Christian Era some 3000 members. They lived in cloisters; divided the day into a fixed *régime* of work, worship, and charity; possessed no private property, but had all things in common; and by their manner of life and method of government furnished the prototype of the Christian monks. Further, these Essenes are thought to have handed down in their sect the doctrines out of which grew the secret teachings of the Kabbala, so important in the history of Jewish thought and custom. As Jewish monks they are important figures in the history of monasticism. They were scattered mainly through Palestine and Syria. The Therapeutae or Worshippers have been heretofore regarded as a sect of Jewish recluses, whose doctrines and practices differed only in minor points from those of the Essenes. They were supposed to be found only in Egypt, their chief seat being on the Mareotic Lake, near Alexandria.

That such a sect ever existed, we know only from Philo, and only from this one tractate of Philo. But Lucius and his followers regard this work as having been written toward the end of the third century, because it depicts, as they think, a set of conditions exactly found at this period and not before. They further suppose it to have been written by some apologist of Christian asceticism and published under the name of Philo, in order to give it the weight of a distinguished name. If this position is to prevail, we shall have to cut out one article from our encyclopaedias and one chapter from our histories of religious sects. The main arguments of the opponents of the authenticity, Lucius and his party, are briefly these: 1) There is no mention of the Therapeutae or of the tractate on the *Contemplative Life* before Eusebius, although Josephus and also Strabo (in his account of the Mareotic Lake) had occasion to mention them, had they been in existence. Even Philo himself never mentions the Θεραπευταί, except in this document, always using that word elsewhere in its usual meaning to signify worshippers or the pious in general and not any particular sect. 2) The *De Vita Contemplativa* is an appendix to the *Quod Omnis Probus Liber Est.* But this *Q. O. P. L.* and the lost treatise: *Every Evildoer is a Slave*, formed a single

literary whole and therefore wanted no appendix. 3) Philo puts a much lower value on asceticism than does the author of the *Contemplative Life.* 4) The *Contemplative Life* differs materially in use of words and manner of statement from the other treatises of Philo, while it bears strong linguistic resemblance to the writings of the later Christians. 5) The description of asceticism is drawn from conditions prevailing late in the third century. 6) Why was the sect not mentioned in *Quod Omnis Probus Liber Est*, where the Essenes are treated, if the order was an historical one and in existence at the time of that writing?

These are very strong arguments and knotty points for Mr. Conybeare to handle. But he is not dismayed by the character of the opposing evidence nor by the weight and array of the opposing scholars. He says in reply: 1) Josephus is silent about the Christianity growing up under his eyes. An argument *a silentio* cannot therefore in the case of Josephus count for much. As for Strabo, in his long description of Egypt he only refers to the Jews, in a single line, to say that the papyrus trade was in their hands. You could not conclude from his account of Alexandria that it contained a single Jewish citizen. And as far as contemporary silence in general is concerned, have we not the analogy of the Copts, of whom we know nothing until we suddenly hear of them in the fourth century, when they were already a numerous sect with a great body of monks? The *De Mutatione Nominum*, the *De Profugis*, and the *Quod Deterius Potiori Insidiatur* give us an account of such ascetics and recluses as are described in the *De Vita Contemplativa;* and all of these treatises are admittedly genuine. 2) The *D. V. C.* does not announce itself to be a continuation of the *Q. O. P. L.*, but it might very well be an appendix to Philo's lost *Apology for the Jews*, which contained an account of the sect of the Essenes referred to in the first sentence of this tractate on the *Contemplative Life.* 3) Mr. Conybeare shows from the *De Mutatione Nominum*, the *De Profugis*, and the *Leg. Alleg.*, that Philo's attitude towards asceticism was the approving one found in the author of the *De Vita Contemplativa*, though he approved of the monastic or recluse life beginning only after a man had withstood the temptations of the world and had comprehended the meaning of Socratic self-mastery, the worth of which Philo well understood. His ideal, however, of the wise and good man is an ascetic one, and is found in the *Allegories of the Sacred Laws* (iii. 48). "So also, now, he who is perfectly wise, that is, Moses, will be found to have utterly shaken off and discarded the pleasures." The author of the *D. V. C.*

puts no higher worth on asceticism than this. 4) Mr. Conybeare, in a minute, if not exhaustive, criticism of Philonean diction (pp. 343 ff.), finds parallels in the authentic writings of Philo to the supposed un-Philonean words and phrases in the *D. V. C.* These pages and the preparation of the *Testimonia* exhibit the most painstaking and scholarly work of the volume and are on the whole the most conclusive proofs for his contention. 5) In reply to the fifth objection, our author points out that the Eusebian and Armenian texts, the Old Latin and existing Greek texts, "can have converged only at a point long anterior to 300 A.D." (p. 332). The picture of Roman luxury in the *D. V. C.* best agrees with the age of Augustus, and not at all with the end of the third century. Furthermore, the fusion of Judaism with Greek elements, particularly with Pythagoreanism and Stoicism, is not peculiar to the *D. V. C.*, but is precisely what we find in the other writings of Philo. 6) The author adduces strong evidence (pp. 276 ff.) from the *De Somniis* and *Quod Omnis Probus Liber Est* to show that the *D. V. C.* was composed earlier than these two treatises.

These replies to his opponents are all substantiated by a large mass of historical and philological citations, which cannot receive mention here. Although these are the main arguments in the volume, there is a wealth of subsidiary evidence brought to the defence of the author's thesis, which tells powerfully in favor of his contention. He is a good controversialist because he has thoroughly mastered the evidence, but he is too impatient in manner and inclined to ignore the amenities of literary warfare. One cannot but feel that in his handling of the objections of Grätz (vol. V of whose *History of the Jews* has just appeared in English) he weakens his cause by flippancy and impatience, the more so because the reader is not always convinced of the soundness of Mr. Conybeare's arguments. He has certainly brought no direct and conclusive proof that the Therapeutae are referred to by any other author or in any other writing of Philo. And for this curious omission he has brought no really satisfactory explanation. He has, however, I think, made a conclusive defence of the Philonean authorship of the tractate, and if we accept the testimony of Philo as valid for history, then we are either obliged to admit the existence of the sect in question or suppose that he is using the term θεραπευταὶ here in the general sense of worshippers, and not in the sense of any organization. And there seems to be really no evidence in the *D. V. C.* to compel us to the view that the θεραπευταὶ are to be accredited with a definite organization such

as would constitute them a sect. Philo is simply referring to these people as a class of worshippers amongst the Jews who in Egypt went into solitude and devoted themselves to a life of contemplation. Similar θεραπευταὶ there have been amongst mystics and ascetics everywhere. In Egypt they had some particular marks, owing to the status of Judaism there, but were not an organized body of devotees, committed to any particular faith or ritual, beyond that of the Mosaic law. Such a theory would make easier of explanation the lack of mention of any supposed sect of Therapeutae by Josephus, Strabo, Pliny, or by Philo himself. This view, while it preserves the tractate *D. V. C.* in the Philonean canon, would regard any organized sect of Therapeutae as unhistorical and born of misinterpretation.

The volume is an opportune one in view of the unsatisfactory state of the controversy in the last twenty years. It will show, not only that the ghost of the *D. V. C.* has not been laid, but that Lucius and his followers have been mistaken in regarding it as a ghost at all.

W. A. HAMMOND.

SUMMARIES OF ARTICLES.

[ABBREVIATIONS. — *Am. J. Ps.* = *American Journal of Psychology*; *Ar. f. G. Ph.* = *Archiv für Geschichte der Philosophie*; *Int. J. E.* = *International Journal of Ethics*; *Phil. Mon.* = *Philosophische Monatshefte*; *Phil. Stud.* = *Philosophische Studien*; *Rev. Ph.* = *Revue Philosophique*; *R. I. d. Fil.* = *Rivista Italiana di Filosofia*; *V. f. w. Ph.* = *Vierteljahrschrift für wissenschaftliche Philosophie*; *Z. f. Ph.* = *Zeitschrift für Philosophie und philosophische Kritik*; *Z. f. Ps. u. Phys. d. Sinn.* = *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*; *Phil. Jahr.* = *Philosophisches Jahrbuch*; *Rev. de Mét.* = *Revue de Métaphysique et Morale*; *Ar. f. sys. Ph.* = *Archiv für systematische Philosophie*. — Other titles are self-explanatory.]

PSYCHOLOGICAL.

Attention and Will: A Study in Involuntary Action. A. F. SHAND. Mind, No. 16, pp. 450–471.

The principal inferences which can be based on the fact of involuntary action may be summarized as follows. That which makes an action *in*voluntary as distinguished from one merely *non*-voluntary, is the presence of a volition opposed to it. This volition is abortive: we will to realize one idea and fail; but we realize a counter-idea which we opposed. This abortive volition is more than attention to an idea with desire and effort, and contains a distinctive event, — the exclusive identification of ourselves with one idea. This identification is specific, and cannot be resolved into the assimilation of one idea by a body of thought and tendency, which we find in all thought. This identification, this event Will, regarded in its quality or character, is a unique differentiation of conative thought. This event, like all other events, is active, and modifies the psychosis into which it enters. — It is evident from this analysis of involuntary action that it cannot be maintained that realization of the idea is essential to volition. In involuntary action the fundamental character is that the idea we will to realize does *not* produce its existence. It might seem strange that realization of an idea ever came to be maintained as essential to volition, if we did not remember that otherwise, on the common theory, the distinction between thought and will is lost. The analysis of involuntary action also enables us to settle another question. Though many practical people have a

strong conviction that the will does not always follow the strongest motive, psychologists have felt that in order to give any scientific account of the Will, they must assume that it always does. Professor James indeed says that "in all hard cases of volition" we feel as if the line taken were that of greater resistance, but he has not ventured to express more than this surmise. But, in involuntary action, we have no mere surmise that the will sometimes follows the weaker motive, but evidence apparently so strong that we can only draw one conclusion from it. It is, of course, very difficult to find any method for estimating the strength of opposite motives, but, taking everything into account, it may reasonably be inferred that the intense effort sometimes felt when there is a counter-idea present, is due mainly to the superior strength of that idea over the other. — Will, therefore, must be regarded as possessing a unique quality of its own. It is that decisive event which must occur in a process of thought or attention to ideas, before the latter can become volition in any sense that will enable us to distinguish voluntary from involuntary action. Just as in comparing visual and auditory sensations we see that each has developed a special quality of its own, so when we compare Will with Thought and Feeling, or with the lower conative developments, we find in it too a unique quality which cannot be analyzed into others.

DAVID IRONS.

Psychologie du nominalisme. L. DUGAS. Rev. de Mét., III, 6, pp. 645–672.

Generality can be predicated only of a form of activity, not of ideas or things. The perception of an object is a definite act. Just in so far as a series of such acts involves the same form of activity, a habit or tendency to that *kind* of activity is established. This habit as such cannot be ideated. An idea is a habit determined to a particular act. Hence there are no 'general ideas.' *An* idea must be a determinate act, and so particular. The only generality lies in the *habitude* viewed as the possibility of any or any number, indifferently, of a series of perceptive acts. Generality is, then, at bottom, a predicate of the will rather than of the intellect. Thought is limited activity. The different series of acts constituting the different habits or lines of activity are determined by the different organs receiving stimuli. Thus again the general may be defined as 'the identical *manner* in which reactions against impressions occur.' If at every stimulation the habitude were completely determined, all the acts in

the series would be reproduced. But what is wanted in thinking, that is, in getting at the relations between these lines of mental movement, is not the whole series of particular acts, but merely the kind or form of activity involved. Hence the need of a symbol to stand for the form involved in the series as a whole. This symbolizing is the function of language. The word thus becomes the stimulus, not for a series of particular acts, but for an attitude of mind. There is, then, more justification for the nominalists' view that universality resides only in words, than for the conceptualists' contention that it resides only in ideas. For universality is in the word functionally, while it is in no sense in the idea. In fact, both are wrong, the real seat of universality being in the movement, the form of the activity which the language symbolizes. The freer the habit becomes, the less definite are the images stimulated by the symbol. The value of the activity is felt immediately through the symbol. Hence the more abstract and general knowledge becomes, the more truly may we say that it is only language well constructed, if we understand by 'language,' not something outside thought, but the concentrated form of thought.

A. W. MOORE.

The Confusion of Function and Content in Mental Analysis. D. S. MILLER. Psych. Rev., II, 6, pp. 535–550.

Function and content are two different aspects of mental phenomena, though the distinction between them is too commonly obscured. The confusion referred to consists in supposing that mental causes, unlike physical, must themselves be an index, by the internal evidence they offer, of the train of consequences they entail; that their function must be wholly determined by their content, and that accordingly their content is a sufficient key to their function. This confusion can be brought out most clearly by examination of a series of cases. (1) In the case of generic ideas what we have in our minds is a perfectly concrete, though a more or less blurred and shifting, vision. In addition to this image, however, there is the tendency of this mental state, by its associations, to prompt the right action towards the members of the class, and inhibit any false thoughts about them. The importance of these forms of consciousness does not depend upon any inner significance they may possess, but upon what they bring after them in the mental train. (2) A probable theory of belief is that it is occasioned by a spontaneous, and not by an indissoluble, association of ideas. If this theory be accepted, it

shows that it is not the presentation of ideas which is of importance in the production of belief, but their behavior after they are presented, that is, their influence in preserving each other in firm association. (3) When I try to think of 'nothing,' in a room, *e.g.*, I picture to myself the room, and continually keep excluding the image of any object in the room that may come before my mind. Here it is the maintenance of my idea and the inhibition of all other ideas — in short, the *function* and not the *content* of ideas — that enables me to think of nothing. (4) It is the function of our sense-perceptions to stand for certain objective facts, and in such a way as to guide our action in reference to them. But these perceptions do not have *in themselves* a conscious intent to represent the objective facts. If such were the case, function and content would be inseparable. As it is, the confusion of these two points of view leads to the conclusion that state of consciousness and mental object, idea and content, are different.

G. A. COGSWELL.

On Dreaming of the Dead. HAVELOCK ELLIS. Psych. Rev., II, 5, pp. 458–461.

There are instances of dreams in which the dead are seen as alive. This dream-type may be accounted for as follows. The death of a friend sets up a barrier which cuts into two the stream of impressions concerning him. To effect a harmony between the images representing him as dead and those representing him as alive, the dream-consciousness produces the theory that the person has come to life. If these dreams have an organic foundation which causes them to occur with some degree of frequency, they may in primitive times have played an important part in evolving the belief that death is only a transitory and apparent phenomenon.

I. M. BENTLEY.

Les phénomènes élémentaires de la vie. F. DANTEC. Rev. Ph., XX, 8, pp. 113–153.

The two phenomena here considered are the two that are absolutely necessary for the maintenance of all life, namely, *addition* and *assimilation*. The term 'addition' covers all processes that introduce new material into the protoplasm. As observed in unicellular animals, the process is wholly under the control of mechanical forces. All the intra-protoplasmic actions of the protozoa could take place without any nucleus in the cell, if one supposes that in some way the com-

position of the protoplasm is kept constant. But addition changes the composition of the protoplasm. All the processes which dispose of new material so as to maintain the composition of the protoplasm constant within certain limits, are included under the term 'assimilation.' The studies of Balbiani, Hofer, and Verworn confirm M. Dantec in his conclusion that assimilation takes place only when there is a nucleus present in the protoplasm. The relation of the assimilative process to the nucleus remains a mystery. Yet the question is worthy of investigation, for it is the true vital phenomenon upon which all other vital processes depend.

ALICE J. HAMLIN.

Sur l'origine sensorielle des notions mécaniques. CLÉMENTITCH DE ENGELMEYER. Rev. Ph., XX, 5, pp. 511–517.

Students very quickly form a notion of Velocity, but the distinction between Force and Work presents great difficulty. Reflection upon this anomaly suggests a problem for physiological psychology. What part is played by sight, touch, and the muscular sense, respectively, in our knowledge of motion, of force, and of mechanical work? Sight tells us nothing concerning either force or work; it enables us to perceive the quantity and direction of motion. Touch gives us the notion of pressure, rarely that of motion also. The muscular sense fails to distinguish between motion and work, between work and force, thus giving rise to a confusion between these ideas. It acts towards these phenomena as if they were of the same order, differing in intensity only. The teacher of mechanics should begin with the notions most familiar and most evident to the beginner. Physiological psychology should inform us what these notions are.

D. R. MAJOR.

Reaction Time with reference to Race. R. M. BACHE. Psych. Rev., II, 5, pp. 475–486.

Spencer calls attention to the contrast between the savage and the civilized man in that the former is so much more than the latter a creature of secondary reflex movements. If, for example, a savage hurts his foot against a stone, he will in all probability immediately kick the stone. This fact can be accounted for, on the ground that the automatic preceded the intellectual condition of man, and that with the disappearance of the primitive conditions of life secondary

reflexes became less and less necessary for self-preservation. The savage ought then to have quicker reflex action than civilized man. In support of this conclusion the reaction-time of 12 Whites, 11 Indians, and 11 Africans is given, for auditory, visual, and electric stimulation. The average time for Indians and for Africans is found to be much shorter than for Whites.

I. M. BENTLEY.

Emotion, Desire, and Interest: Descriptive. S. F. M'LENNAN. Psych. Rev., II, 5, pp. 462–474.

In analyzing concrete emotional experiences we find it difficult to say at first, whether we are dealing with emotion, desire, or a fact of interest. If we examine such states as 'love' and 'hatred,' we shall find all three involved. There is a primary interest, then emotion with desire, and, when desire is realized, interest again. Interest is thus at the beginning and end of both emotion and desire. Analyzing more closely emotion and desire, we find that each involves (1) an intellectual element, (2) an attitude towards or against the stimulus, (3) the swell or drive of feeling, (4) pleasure and pain coloring. In the nature of emotion there is inner strife and yet unity, a lack of equilibrium and a seeking for harmony. When the conflicting elements are finally harmonized and we know what we are going to do, the state passes over into volition. If present action is inhibited, desire or preparedness for action ensues. This 'preparedness' does not 'set' immediately, however, and any new suggestion may bring about the old turmoil. Until the desire is 'set' it may pass back into emotion. When inhibition is removed and the 'set' reaction pours forth, we have deepest interest.

I. M. BENTLEY.

ETHICS.

Social Evolution. DAVID G. RITCHIE. Int. J. E., VI, 2, pp. 165–181.

The phrase 'social evolution,' as generally used, implies the assumption that biological conceptions throw *some* light on social phenomena; it generally implies also that without biological theories and conceptions social phenomena cannot be properly studied, nor social problems scientifically dealt with. It is worth while to con-

sider, however, what light biological theories of evolution throw upon the history and the practical problems of human society. The greater complexity of social life among human beings, as compared with what one finds among plants and animals, even social animals, may well suggest that biological conceptions cannot, without considerable modification, be applied to social phenomena. Biological conceptions are certainly less inadequate than mathematical, physical, or chemical conceptions; but an uncritical use of them in this connection involves a constant risk of mistaking metaphors for scientific laws. The applicability of the idea of *natural selection* to human society may be taken as an illustration. The question for the biologist is: What other factors than natural selection, if any, are there in organic evolution? The question for the sociologist is more complicated; for he must not assume without proof that there are no other factors in social than in organic evolution, nor that natural selection means exactly the same thing in human society that it does among plants and animals. For example, in sub-human evolution, races and individuals that have injurious customs perish by natural selection; but in human evolution, where there is consciousness and reflection, the injurious custom may be changed without the extinction of the race or individual that practises it. The natural results of natural selection are continually checked in human society. Thus the theory of natural selection, when applied to human society, sets a problem, but does not solve it. Take, for example, the case of religion. 'Religion exists everywhere among human beings; therefore it must be due to natural selection; therefore its essence is to further social utility.' Thus reasons Mr. Benjamin Kidd in his *Social Evolution*. But what is a 'religion' in Mr. Kidd's sense of the term? One of the problems which most puzzles the student of human history is presented by the apparently anti-social and injurious elements contained in so many of the religions of the world. This very matter has been urged as an objection to the applicability of the theory of natural selection to the explanation of social phenomena. There can be no doubt that 'in primitive conditions of society' religion is the strongest bond of social cohesion; but it is certainly not the sole bond between human beings; nor is a conservative force necessarily under all circumstances beneficial. Again, mere increase in numbers does not always mean 'social progress,' nor decrease, 'national decay,' as biological sociologists are apt to suppose.

D. R. MAJOR.

The Conscience: Its Nature and Origin. WILLIAM W. CARLILE. Int. J. E., VI, 1, pp. 63–77.

Kant's most conspicuous service to ethical science consists in his having secured practically universal recognition of the fact, that any satisfactory theory of the nature and origin of conscience must account for the absence of all considerations of personal consequences, in this world or the next, in action that can claim the sense of duty as its motive. Opposed to this view, however, is the theory of Spencer, that our current conceptions of duty are the result of the experience of past generations with reference to rewards and punishments. But this latter theory wrongly postulates the validity of the method of chemistry in the explanation of psychological metamorphoses. Rather must the method of verification, as used in physics, be applied. An explanation that postulates a metamorphosis in which the new product has nothing in common with the old, is, in psychology, simply equivalent to no explanation at all. But, if we grant that as to its origin Conscience is ultimate and unanalyzable, the question as to its nature still remains. Is it a special sense, the Moral Sense, or must it be regarded under the category of Reason? Clearly the latter view must be accepted. But, if we regard it as Reason pure and simple, we are viewing it as a lever without a fulcrum. Reason aids us to determine what is just and unjust, but assuredly it does not give justice and injustice their meaning. Whence then this meaning? As the child gets his first conception of truth and untruth when he sees them in the concrete and in contrast, so also he gets his first conception of justice and injustice when he meets them in experience. He learns to apply to himself what he first sees in others. The sense of justice is resentment become impersonal. There is no thought of consequences in our indignation at wrong done to another. As the explanation of the prohibitive aspect of the Conscience is to be found in the transformation of resentment, so the explanation of its positive aspect, of the approval that we accord to virtue, is to be found in the transformation of gratitude. The criterion of the good, as well as of the true, is, in the last resort, the concurrent opinion of others. The principle of the 'parity of reasoning' holds in ethical as in speculative thought.

J. F. BROWN.

METAPHYSICAL AND EPISTEMOLOGICAL.

The Hegemony of Science and Philosophy. ALFRED FOUILLÉE. Int. J. E., VI, 2, pp. 137–164.

This article consists of three parts. The first deals with the conflict between those who boast the achievements of Science, and those who insist that scientific methods are inapplicable in certain departments of reality. Philosophy alone, it is claimed, can put an end to the strife. In the second part an effort is made to state the mutual relations of Science and Philosophy; also, to show the attitude of each to reality. "Science concerns itself with the mutual relation of objects, considered independently of their relation (1) to a sentient and thinking subject, (2) to the whole of existence. Science undertakes to determine the objective relations of phenomena, while it eliminates as much as possible the consciousness for which they exist and through which they are known. Such a point of view is partial and abstract, since it does not embrace the whole of reality. After abstracting the thinking subject, pure sciences abstract still further all objects other than the one which is to be considered. Philosophy corrects the abstraction which has been made of the thinking subject, reëstablishes the unity of nature and of thought." The third part treats of the place of 'faith' or 'belief' in practical life. It contains, also, a discussion of the relations of science, religion, and philosophy.

D. R. MAJOR.

L'espace et la géométrie. H. POINCARÉ. Rev. de Mét., III, 6, pp. 631–646.

Representative space in its triple form — visual, tactile, and motor — is essentially different from geometrical space. The latter is continuous, infinite, tri-dimensional, and homogeneous, that is, all its points are of identical value in it. Pure visual space has only two dimensions, is limited, not continuous, not homogeneous. Tactile space is still more complex and further removed from geometrical space. Motor space is not homogeneous, and has *potentially* as many dimensions as there are nerve fibres reporting external objects. This number is *actually* reduced, by neglecting certain of these reports, finding by experience that they agree, sufficiently for practical purposes, with certain others. But this reduction is not an

a priori form imposed necessarily upon our sensibility. It is wholly a matter of expediency. But are not all objects represented in geometrical space? No, but we may reason about them as if they were. 'Localizing' an object in space means representing the movements necessary to reach it. What then is the significance of geometrical space? Phenomena are (1) Involuntary — not accompanied by muscular sensations and so attributed to external objects, or (2) Voluntary — accompanied by muscular sensations and attributed to our own body. Among the changes in (1) are *some* which can be 'corrected' by correlative changes in (2). The laws of this process of correction constitute the Science of Geometry. Such correction is only possible in the case of solid bodies. Geometry deals therefore with only one particular phase of space experience in general, *viz.*, adjustments involving solidity. Were there no solids in nature there would be no Geometry. The three dimensions of geometrical space are due to the fact that we happen to be constituted as we are, and happen to live in this particular kind of world. In a different world and for a different self, space might have fewer or more dimensions. Finally, though experience plays so large a part in geometry, the latter is not an experiential science, for it is occupied not with actual but with ideal solids.

A. W. MOORE.

The Origin of a 'Thing' and its Nature. J. MARK BALDWIN. Psych. Rev., II, 6, pp. 551–573.

The author's conclusions may be summed up as follows. (1) All statements of the nature of a 'thing' are, for the most part, statements of origin. (2) Statements of origin, however, never exhaust the reality of a thing, since they cannot be true to the experiences which they state unless they construe the reality, not only as a thing which has had a career, but also as one which is about to have a career; for the expectation of the future career rests upon the same historical series as the belief in the past career. (3) All attempts to rule out prospective organization or teleology from the world would be fatal to natural science, and also to the historical interpretation of the world found in the evolution hypothesis; for the category of teleology is but the prospective reading of the same series which, when read retrospectively, we call evolution. (4) The fact that a thing, and more especially mental products, ideas, intuitions, etc., have a natural history, is no argument against their validity or worth as having application beyond the details of their own

history; since, if this were so, a natural history series could produce nothing new. (5) All these points may be held together in a view which gives each mental content a twofold value in the active life. Each such content begets two attitudes, by its function as a genetic factor in the progressive development of the individual. As far as it fulfils earlier habits, it begets and confirms the historical or retrospective attitude; as far as it is not entirely exhausted in the channels of habit, so far it begets the expectant or progressive attitude. (6) All organization in the world rests ultimately on the basis of an unconscious convention of our organisms, made during the growth of our experience. The category of causation, *e.g.*, has come to be applied to reality through a continual selecting out, from the mass of events, of those which have exhibited the more definite and invariable aspects of behavior. This category, however, is not capable of universal application, since it fails to explain the origin of that very selective activity on the basis of which it has arisen. (7) Both the naturalist and the intuitionist define 'nature' in terms of 'origin.' At any point in the career of a thing, the former can describe *what* the thing is, only by tracing its career further back; while the latter naturally interprets the nature of the First Cause in the light of mental behavior. The true way of regarding the nature of a thing is to view it, at any given stage of its career, both retrospectively and prospectively — in the latter case as promising a widened sphere of action. (8) In order to explain the category of potentiality a new refinement must be introduced. When we speak of the potency that exists in the behavior of a thing, we have a general expectation of a further career for the thing, but always under the condition that when it shall have reached any point in its future career it can then be interpreted in terms of retrospection. G. A. COGSWELL.

Organic Evolution and Mental Elaboration. HUBERT M. FOSTON. Mind, No. 16, pp. 472–488.

To regard man as a microcosm, as containing in himself a copy of the universe in all its essential aspects, is a characteristic of philosophical thought especially in modern times. The aim of this article is to trace the correspondence between mental life in its three stages of Perception, Imagination, and Conception or Reason, on the one hand, and organic life in its three stages of Vegetable life, Animal life, and Social life, on the other. The analogy between perceptions and plants is seen in the fact that both show, in the early stages of their development, evidence of differentiation and

integration,—the former showing an evolution from an original "sensation-continuum," and the latter exhibiting a progressive advance from a primary "hypothetical simple tissue." Both perceptions and vegetables are also subject to the law of the 'survival of the fittest.' In the next stage of development, both animals and images show an advance over the preceding stage in the fact that they are less dependent on their environment, are not so much subject to the *here* and the *now*. The after-memory image, on the one side, and reflex action, on the other, form the transition between the first and the second of these stages. Interest begins to reveal itself in the case of the representative images, and purpose, in the conscious life of animals. The formation of the generic image, by which a number of like images are fused into one, and the possibility of their preservation thus secured, corresponds to the joining together of a number of scattered members into a flock or herd, by which the destruction of these individuals is prevented. The growth of class-marks in the mind, by which the over-specialization of separate ideas is prevented, has its counterpart in the growth of custom in early human societies. Language, as the expression and preservation of a distinct mutual connection between things, has its parallel in a system of positive institutions in the tribal group. Finally, as society fulfils its function better, the more it allows liberty to the individual to develop his own capacities, so in reason there are a variety of aspects of individual objects which must be recognized, if reason is to have an effective application to things as they are. The condition of positive intellectual progress is the patience to let an object form its own true character in our minds, and what we here call 'patience' is called 'tolerance' in society. G. A. COGSWELL.

HISTORICAL.

Gedächtniss-theoretische Untersuchungen und mnemotechnische Spielereien im Altertum. BERGEMANN. A. f. G. d. Ph., VIII, 4, pp. 484–497.

Scientific psychology made no progress amongst the Greeks after Aristotle. There was no longer any originality in Greek intellectual life, and scholars began to sift, collect, and acquaint themselves with the mass of science and literature already produced. Of these scholars there were some who were impelled by a speculative interest,

others by a practical interest. To the former class belong the Stoics, Epicureans, and Neo-Platonists, and to the latter, physicians, orators, and teachers of oratory. Amongst the former, only the Neo-Platonists have done anything of importance. Plotinus (205–270 A.D.), in opposition to Aristotle, maintains the view of dualism. Man is a double being, made up of body and soul, and there is no physical process which corresponds to psychical phenomena. There is no material substrate of sensation, and so we find here no psycho-physical theory of memory as with Aristotle. Memory is for Plotinus a purely psychical function. The body does affect memory, however, in a negative way. How the body does this, Plotinus does not make plain. He simply says that, by keeping the body in due subordination, memory receives the negative assistance of not being hindered. The age of Plotinus, as the age of encyclopedic knowledge, of collections and libraries, was the golden age of mnemotechnics. Artificial devices for the assistance of memory are by no means a new invention. Mnemotechnics were probably first devised by one of the Sophists in the age of Socrates. M. Antonius Gripho, who has been identified with the "incertus auctor rhetoricorum ad Herennium," and Cicero, invented mnemotechnic helps to memory, and both had a high opinion of such artificial aid. Quintilian, on the other hand, in the *Institutio Oratoria* expresses disapprobation of all these mnemonic artificialities, on the ground that they in no wise tend to strengthen memory, but rather load it with a double burden. The most important thing to him is the constant exercise of memory, by the committing of passages of literature, and the repetition of what has been learned. In thus training the memory systematically, one trains it effectively, and in this Plutarch and Lucian agree. W. A. H.

Zu Anaxagoras. EMIL ARLETH. Ar. f. G. d. Ph., VIII, 4, pp. 461–465.

Arleth replies to the objections of Zeller, and explains the misunderstandings in regard to the interpretation of frag. 5 of Anaxagoras. In defence of the view that λεπτότατον and καθαρώτατον may be predicates of spirit, he cites as an analogous case the statement of Anselm of Canterbury in reference to God, *id quo majus cogitari nequit;* also the distinctions made by Descartes between *vera extensio* and *extensio per analogiam*, the first applying to body, the latter to spirit. Further, in regard to the ambiguity in frag. 5, whether immanence or transcendence is to be ascribed to the divine

Nous, the author asserts that one is not helped by Zeller's explanation (*Ar.*, VIII, p. 151), an analysis of which he takes up in detail.

W. A. H.

Auguste Comte. L. DUGAS. Rev. Ph., XX, 9, 225–251; 10, 360–398.

It is almost impossible to make a clear and connected summary of these articles, but the following points may be given. The ideal of Comte, as a young man, was to realize in his life and thought the Greek ideal of harmony, and, according to Dugas, he was always true to this ideal. Positivism denies the existence of absolute truth. All truth is relative to man, 'man' being understood to mean the species and not the individual, so that truth is capable of fixity and universality. The first step towards realizing the ideal of harmony is to establish a universal creed. This agreement of minds is not to be realized in doctrines, but in the acceptation of a common method. Philosophy, after all, is not the possession of, but the search for, truth. It is enough to possess a common method and the necessary principles; the applications one can make for one's self. As soon as the positivist doctrine began to take form, the harmony of the positivists was disturbed. Though willing to accept a common method, all would not accept Comte's application of this method. They separated into two classes, called by Comte, respectively, positivists of the heart, and positivists of the intellect. Positivism must appeal to both intellect and heart, to those who are largely intellectual, and to those who are largely intuitional, women and the poorly educated. In this very appeal to feeling, the source of moral conduct, positivism becomes a practical philosophy. Comte is not satisfied with this harmony and equality of intellect and feeling, but in the second phase or period of his philosophy subordinates intellect to feeling, emphasizing sociology and religion. In this way he seems to make a return to the first of the three stages which he lays down as necessary in the natural development of man, namely, the theological. The religion of Humanity is the end, and positivism is the means for attaining it. Positivism, supposed to be the third stage, in the end thus returns to the first stage. Dugas asserts that, notwithstanding this vicious circle, positivism is always in accord with itself, though he does not explain just how this comes about. The social point of view dominates positivism, which in some measure accounts for this subordination of the intellect to the heart. After

formulating this principle, Comte becomes more and more mystical, giving fuller play to his imagination. In the religion of Humanity, humanity becomes *le grand être*, and Mme. de Vaux, as the personification of *le grand être*, the object of adoration. Comte thought and lived for humanity, and should therefore be respected by humanity. He reformed science, only for the ultimate purpose of reforming manners and morals. He is the founder of sociology.

FRANCES C. NEVINS.

The Idea of Nature in Plato. ALFRED BENN. Ar. f. G. d. Ph., IX, 1, pp. 24–49.

Plato's conception of nature as an objective standard of human action is a neglected feature of his philosophy. It represents the influence of the Sophists. There were two schools of Sophists, one following νόμος, the other φύσις. Protagoras represents the former, Hippias the latter. In the *Protagoras* and the *Gorgias*, Plato accepts the supremacy of law, but tries to harmonise law and nature. The frequent use of the phrases κατὰ φύσιν and παρὰ φύσιν probably indicates a late dialogue. If this be true, then we find a gradual development of naturalistic doctrine, reaching its height in the *Laws*. Here nature is exalted over law, but, as before, there is an attempt to harmonise the two. Plato's communism was probably derived from the Naturalists. Its great development in the *Laws* points to his growing sympathy with the latter.

ELLEN B. TALBOT.

NOTICES OF NEW BOOKS.

The Conception of God. Published by the Philosophical Union of the University of California, Berkeley, 1895. — pp. 84.

This is an address by Professor Royce with comments by Professors Mezes, Le Conte, and Howison. The text of the address fills one-third of the volume; and the comments by Professor Howison somewhat more. It is highly creditable to the University of California to have arranged for the consideration of the high theme discussed, and complimentary to the public that "some fifteen hundred persons" assembled to listen to such addresses. If the effect on the mind of a reader is not so stirring as it was to the listener in Berkeley, this is doubtless in part due to the difference between oral and written discourse, and in part to the circumstance that the proceedings were supplementary to previous studies of the Philosophical Union, of which the present pamphlet contains no record.

Professor Royce makes his position very clear. If there is a God, we must discover him in experience. Our individual experience is made up of shreds and patches. But we interpret it by the consensus of the various experiences of our fellow-men, and by the relatively organized conceptions of science. Nay, we advance beyond these to the ideal of an absolutely organized experience, — as if all phases of actual and imaginable experience were expressions of a universal meaning present to one universal subject. The question whether there is an absolute reality (God), is equivalent to the question whether there be such an absolutely organized experience. And that there must be, Professor Royce satisfies himself by two considerations; namely, first, that its bare ideality, held *true*, implies its reality; and, secondly, that its non-existence, supposed *real*, presumes it. I take this substantially to mean that the very fragmentariness and error of our actual experience must, to account for themselves, postulate an absolutely complete and perfect experience. And of such experiences absolute reality (God) is the necessary correlate.

Professor Mezes objects that this reasoning does not prove that there is a real being worthy of the exalted name of God. Professor Royce's all-inclusive being is, so far as the argument leads, devoid of spirituality.

Next, Professor Le Conte, abandoning the "subtle method of Professor Royce in reaching the conclusion of the personal existence of God," sets forth the argument of cosmic theism. As against Professor Royce's emphasis of thought, he emphasizes power and love as divine attributes. Professor Le Conte accepts the orthodox view of moral evil, and endeavors to vindicate our hope of immortality. Like the preceding speaker he is clear, forcible, and even eloquent.

Professor Howison has the last word. He makes criticisms and raises questions. The distinguishing note of his paper is that God must be conceived primarily from the point of view of conscience. The so-called Absolute Idealism of Professor Royce gives too intellectual an interpretation to the ultimate reality. Besides, the notion of "absolute experience" is a suspicious one. I have not space to follow Professor Howison into details. But his recapitulation in a series of questions (pp. 81-84) offers abundant material for reflection upon the issues raised by the various speakers.

All these thinkers believe in God; no one of them is satisfied with the other's proof of that belief. This makes the pamphlet suggestive, if unsatisfying reading. One lays it down with the feeling that much is still needed to clear up our notions regarding the nature of the Divine Being. If we all knew what we meant by the word God, there would, I suspect, be much less disagreement as to the question of the existence of God.

J. G. S.

Arnold Geulincx und seine Philosophie. Von J. P. N. LAND, Professor an der Universität Leyden. The Hague, Martinus Nijhoff, 1895. — pp. x, 219.

Geulincx could not have found a better biographer and expositor than Professor Land of the University of Leyden, the editor of his collected works and the author of numerous treatises on his life and writings. The volume before us was prepared at the request of a "German colleague" (his name is not given), who has assumed the editorship of a series of popular monographs on the leaders of philosophy, resembling *Blackwood's Philosophical Classics* and similar excellent collections. But owing to a misunderstanding with the publisher, Professor Land felt obliged to sever his connection with the German enterprise, and to publish his work under his own auspices. It is safe to say that the author's reputation and the merit of his book will procure for it the recognition it deserves.

Geulincx' life and system are clearly and logically set forth according to information obtained from the very latest manuscripts. Due regard is paid to the proper proportion of the parts, and though the book contains quite a number of typographical errors, it is well printed. The presence of an index would, in my opinion, add to the value of the little volume. It would also have been wise (considering the original purpose of the work, and in view of the fact that the author regards Geulincx as a more independent follower of Descartes than is usually supposed), had Land devoted a special chapter to the consideration of the relation between the two. He combats the theory that the philosophy of the disciple is merely an exaggeration of the principles of the master. It cannot be denied that the former is not a slavish imitator of the latter. Of course, the two systems closely resemble each other. Geulincx' contempt for scholastic learning, his doubts, his principle of self-certainty, his doctrine of innate ideas, his

criterion of truth, his rationalism, his dualism of body and mind, his attributes of extension and thought, his conception of the freedom of the will, etc., all these are Cartesian elements. But we notice important differences between him and the great Frenchman. There are critical tendencies in the pupil, which, had they been developed, might have eclipsed the glory of the teacher. "We must not imagine," he says (p. 116), "that things exist as they appear to the senses, *nor even as they are thought by us. We cannot tell what they are in themselves*; which proves how imperfect we are. . . . Although we ascribe to things the illusions of the senses and of the understanding, a divine element within us invariably tells us that we are mistaken." God alone has a knowledge of things-in-themselves; we, on the other hand, know our own ego merely. All other knowledge is uncertain. This is indeed a great deviation from Cartesianism.

Geulincx' dualism is also more consistent than that of Descartes: he repudiates the notion of reciprocal action, or *influxus physicus*. Land shows that the term 'Occasionalism' cannot be applied to the philosophy under consideration (pp. 141 ff.). We cannot act upon the physical world, nor can the physical world act upon us. Nor are my volitions the *causae occasionales* for God's producing movements in the physical world, nor movements the *causae occasionales* for his creating ideas in me. Nor did he pre-establish the harmony between soul and body, for the will is free. God knows what I am going to will, although my will is free, and the entire universe has been arranged according to that knowledge. "God in his infinite wisdom has instituted laws of motion, so that a movement which is entirely independent of my will and power coincides with my free volition."

The book is divided as follows: Introduction (pp. 1–12); Part I, Life (pp. 12–89); Part II, The Doctrine (pp. 89–215), Ch. I, Human Knowledge (pp. 89–129), Ch. II, Nature and World (pp. 129–160), Ch. III, The Rational Life (pp. 160–215); Conclusion (pp. 215–219).

FRANK THILLY.

Ueber den Einfluss von Gesichtsassociationen auf die Raumwahrnehmungen der Haut. Von MARGARET FLOY WASHBURN. Leipzig, W. Engelmann, 1895. — pp. 60.

Experiments on tactile space-estimations have hitherto left out of account the fact that such estimations, by persons of ordinary 'visualizing' powers, can never be made in purely tactile terms. Reagents whose visual imagination is normal will have in consciousness, during experiments of this sort, a kind of visual map of the surface operated on, in which the general outlines and salient features of the surface will be more or less clearly represented. The more aid given by this set of visual associations, the more accurate the space-estimation will be. It is obvious that when the points touched in the experiment lie near the (visual) boundary-lines of the

surface, or near some salient feature, the visual associations will be stronger, and localization in consequence more accurate.

This theory has direct bearing on the following results of previous experiment. (1) A smaller distance between two compass-points can be perceived on small surfaces (*e.g.*, finger-tip) than on large surfaces (*e.g.*, back). The two points will approach the visual boundary-lines more closely on a small than on a large surface. Of course, anatomical conditions largely account for this difference, but visual associations probably play some part in the case of normal reagents. (2) A smaller distance between two points can be perceived on the limbs, if the points lie in a line horizontal to the length of the limb, than if they lie in a line parallel to it. Obviously, in the former case, they approach the visual boundary-lines more closely. (3) The ratio between the local discriminativeness of two parts which is found by the method of equivalents, is closer to unity than a ratio between the same parts found by other methods (Camerer). The method of equivalents puts a much greater strain on the reagent than other methods, and he is more likely to help himself out by visual associations during experiments by that method. And the more the judgments are made in terms of sight, the closer to objective equality will be the distances estimated as equal on different parts of the body, and the closer the equivalence ratio will be to unity. (4) The larger the distances compared by the method of equivalents, the nearer to unity is the equivalence ratio (Camerer). The explanation of this fact is obvious from what has been said.

The following results of my experiments tend to confirm the above theory. (1) The superiority of 'horizontal' over 'vertical' impressions failed to appear in the case of a woman blind for forty-five years, and of two persons whose visualizing powers were slight. The other two reagents, both fairly good visualizers, showed it, and it appeared in the case of the former two when a sufficiently large distance between the points was taken. (2) Certain reagents who showed power of control over their tendency to visualize, gave an equivalence ratio further from unity when the tendency was controlled than when it was given full play.

Other results of the experiments described in this paper bear upon the methods most suitable for use in such experiments. 'Right and wrong cases' was found to be the best method, and more regular results were obtained when the order of impressions (*e.g.*, 'horizontal' or 'vertical') was regularly varied, than when the series was wholly irregular or perfectly uniform.

AUTHOR.

Die Vieldeutigkeit des Urtheils. Von Dr. ADOLF STÖHR. Leipzig und Wien, Franz Deuticke, 1895. — pp. 71.

The thesis of this little work is that the term 'Judgment,' as used in Logic and Psychology, rests upon the figure of a judicial decision in a legal process. The possible significations of the name, then, are only limited by

the number of applications of which this figure is capable. As different processes which the word 'Judgment' has been used to express, the author distinguishes: (1) Judgment in the sense of expectation; (2) as mathematical construction; (3) as the spoken expression of existence; (4) in the sense of logical comparison; (5) as an analysis of Concepts; (6) as a process of naming differently an identical phenomenon; (7) as subsumption; (8) as an expression of the possibility of subsumption; (9) as synthesis; (10) as affirmation or negation; (11) as that which is true or false; (12) as approval or disapproval. This list is not exhaustive, but simply enumerates some of the most important senses in which the word is used. It is quite useless, then, to investigate the nature of Judgment in general, or to formulate any theory regarding its function. The term 'Judgment' represents a more than twelvefold equivocation, and each of its types must receive separate analysis.

As no proof, or even semblance of proof, is brought forward for the author's main contention, — that different mental processes are included under the term 'Judgment' in virtue of the judicial image which can be applied to all of them, — it need not, I think, be taken very seriously. Many of the distinctions given above as instances of the ambiguity of Judgment seem, also, to be distinctions without a difference. J. E. C.

Zur Theorie der Aufmerksamkeit. Von Dr. H. E. Kohn. Halle, Niemeyer, 1895. — pp. 48.

The author states that the thesis of his pamphlet is the proposition that there is no *essential* difference between 'attentive' consciousness and 'inattentive consciousness; that they are only differences of degree of one and the same attribute. He attacks the subject from the Herbartian standpoint, regarding every change in consciousness as the result of the fusion of a Perception-mass and an Apperception-mass. An attentive state differs only in the greater intensity of its reproduction; or, in sensibly excited attention, in the greater intensity of the stimulus due to the disposition of the sense-organs and of the mind. The "mechanical correlate" of the psychical process of Apperception is taken to be the assimilation of a new stimulus in the central organ. And this central organ, by virtue of its earlier experiences, affects the stimulus in various ways. No further account is given of the physiological side of the process of attention.

The pamphlet closes with a criticism of the theories of attention advanced by Stumpf, Wundt, and James. The criticism of Stumpf is chiefly concerned with two points: (1) Stumpf's definition of attention as "pleasure in observing"; (2) his inconsistency in constructing on this basis the two classes of voluntary and involuntary attention. The author holds that Stumpf is logically bound to recognize all attention as voluntary, in the sense in which that word is used by Stumpf himself. The criticism of Wundt is less satisfactory, though more extensive. The points criticised

are more or less open to attack, but I believe the author interprets them in a narrow and dogmatic fashion, ignoring statements that essentially modify those quoted by him. The careful student of Wundt must recognize this, I think, in the one-sided presentation of Wundt's distinction between the intensity or consciousness limen, and the clearness or apperception limen. The best part of the author's analysis of Wundt's theory is his discussion of the physiological process of attention as described by Wundt. In the midst of the present controversy over the process as a reënforcement or an inhibition of stimuli, this account of the twofold theory involved, but not fully expressed, in the last edition of the *Psychologie*, should be recognized as a useful contribution to the subject. The criticism of James takes up two topics: (1) James' separation of attention and consciousness; (2) his theory that strain sensations always accompany attention. The author contents himself here with quoting other passages from James, which show the obstacles that should prevent him from accepting either of these positions.

On the whole we may say that the pamphlet covers but a small part of its subject, and refers to a limited number of the theories now claiming notice. But within its own field it gives a clear and straightforward presentation of the Herbartian theory divested of metaphysical assumptions, and it contributes something to the criticism of three prominent theories of attention. ALICE J. HAMLIN.

Histoire de la philosophie atomistique. Par LÉOPOLD MABILLEAU, ancien membre de l'école française de Rome, Professeur de philosophie à la faculté des lettres de Caen. Paris, Félix Alcan, 1895. — pp. vii, 560.

The history of the atomic theory is narrated here by M. Mabilleau, from the standpoint of a sympathizer with the doctrine. The work is divided into five books. In the first the theory is discussed in its earliest form amongst the Hindus; the second book is occupied with the development of the doctrine amongst the Greeks; the third continues the subject in the Middle Ages amongst the Arabs and Alchemists; and the fourth concerns itself with atomism in modern philosophy. This concludes the history of the doctrine, and Book V is taken up with a discussion of the import of the atomic theory for the physical and abstract sciences. The work won the Cousin prize in 1894, was crowned by the Academy, and published by authority of the government at the National Press. A review of the volume will follow. W. A. H.

Mental Development in the Child and the Race; Methods and Processes. By J. MARK BALDWIN. Second edition, corrected. New York and London, Macmillan & Co. 1895. — pp. xvi, 496.

This new edition has the following preface: "The demand for a new edition of my book gives me the opportunity to make certain minor correc-

tions throughout. The only important alteration is to be found in the tables (I and II) on p. 52, in which certain columns had been substituted from other tables which lie unpublished among my papers." The first edition was recently reviewed in this magazine (vol. IV, p. 423).

The following books have also been received : —

Moral Pathology. By A. E. GILES. London, Swan Sonnenschein & Co.; New York, Charles Scribner's Sons, 1895. — pp. vii, 179.

Proceedings of the Aristotelian Society. London, Williams & Norgate, 1895. — pp. 190.

Christianity Re-Interpreted. By C. STRONG, D.D. Melbourne, George Robertson & Co., 1894. — pp. vi, 142.

Mythes cultes et religion. Par A. LANG. Traduit par Léon Marillier avec la collaboration de A. Dirr. Paris, Félix Alcan, 1896. — pp. xxviii, 680.

Le Psittacisme et la pensée symbolique. Par L. DUGAS. Paris, Félix Alcan, 1896. — pp. 202.

La musique et la psychophysiologie. Par MARIE JAËLL. Paris, Félix Alcan, 1896. — pp. vi, 174.

Les sciences sociales en Allemagne. Par C. BOUGLÉ. Paris, Félix Alcan, 1896. — pp. 172.

L'idée. Par Abbé C. PIAT. Paris, Poussielgue, 1895. — pp. vi, 347.

Naturphilosophie. Von Dr. F. HARMS. Leipzig, Th. Grieben's Verlag, 1895. — pp. iv, 204.

Psychologische Arbeiten. Herausgegeben von Professor EMIL KRAEPELIN. Erster Band, 2. und 3. Heft. Leipzig, Wilhelm Engelmann, 1895. — pp. 209–488.

Allgemeinheit und Einheit des sittlichen Bewusstseins. Von Professor W. SCHNEIDER. Köln, J. P. Bachem, 1895. — pp. 132.

Von der menschlichen Freiheit. Von Dr. H. ACHTER. Leipzig, Wilhelm Engelmann, 1895. — pp. 49.

Eine wissenschaftliche Weltanschauung auf religiöser Grundlage. Von J. BARON MIKOS. Leipzig, O. Mutze, 1895. — pp. 39.

Die Lehre des hl. Thomas von Aquino. Von Fr. THOMAS ESSER, Münster, Aschendorff, 1895. — pp. vi, 176.

Notas sueltas sobre la Pena de Muerte. Q. NEWMAN. Santiâgo de Chile, Imprenta i Enquadernazion, Barzelona, 1896. — pp. xii, 228.

NOTES.

BARTHÉLEMY-SAINT-HILAIRE.

M. Jules Barthélemy-Saint-Hilaire, the distinguished translator of Aristotle and long eminent in philosophy and politics, died in Paris, November 4, 1895. Born August 19, 1805, he saw the first and last decade of the century; and in his last years, with hale genial face and elastic step, was still a conspicuous figure in the streets of his native city. His naturally vigorous constitution was preserved by a life-long devotion to walking (one cannot avoid thinking of the Peripatetic to whom he devoted threescore years) and by his simple daily *régime*. He realized Juvenal's prayer of *mens sana in corpore sano*. Barthélemy rendered distinguished service to his country in politics and diplomacy; he was one of the most prominent figures in the Institute for nearly sixty years, during which time he made numerous reports in the philosophical section of the division of the Institute known as the *Académie des sciences, morales et politiques;* he did more than any other man in France, save perhaps Cousin, to awaken and maintain an interest in the great monuments of philosophy; and up to the last, when covered with all the honors his compatriots gladly bestowed on the aged statesman and *savant*, he continued to set forward his literary work. Almost the same may be said of him that Cicero said of the founder of the Athenian Academy: *mortuus est scribens*. Only five months before his death, his life of Cousin was published, a fitting close to the literary and philosophic labors of the learned Academician. It was to Cousin that he was indebted for most of his inspiration and for his career in philosophy, and so, as the last work of his life, he pays Cousin the tribute of a biography. No man in France was so competent to write it. To Cousin, Barthélemy had already dedicated, in the early days of his career, the translation of Aristotle's *Logic* (the first version of the *Logic* ever made in the French language!); then in later years, after the death of Cousin, he dedicated to his memory the *Metaphysics* and the *Problems*. Cousin, by his brilliant success in the translation of Plato, had inspired Barthélemy to do a like service for Aristotle. Furthermore, Cousin was a great and inspiring teacher, and was regarded as a model for French lecturers on Philosophy. During 1828 he had constantly an attendance of above 2000 hearers at his lectures, and through his labors scores of his young contemporaries were impelled to fruitful investigations in the history of philosophic thought. Amongst these no one was more prominent than Barthélemy-Saint-Hilaire.

It was Littré, *père*, who first advised Barthélemy to undertake the preparation of a French version of Aristotle, and it was on this suggestion that he actually began it in 1832, although he had doubtless been influenced by the call of Cousin, first made in 1820 in the preface to his *Proclus* (tome

I, p. xvi), that somebody should do for Aristotle what Schleiermacher had done for Plato. Five years later (1825) the Royal Academy at Berlin, at the suggestion of Schleiermacher, began its monumental edition of the writings of the Stagirite, and charged two of its members — Bekker and Brandis — with the collation of all the MSS. of Aristotle extant in the libraries of Europe. These numbered over one hundred. The task was an immensely arduous one. The new text accompanied by variants appeared, after an incredibly short time for preparation, in 1831. The scholia, index, Latin version, and fragments, filling out five thick quarto volumes, appeared at intervals up to the completion of the work in 1870. This great edition, probably the most perfect ever made of an ancient author, is now being supplemented by the same Academy by the publication of a corpus of the Greek commentators; and about twenty volumes of this supplement have already been published. Nothing so important has been done since the appearance of the Aldine Edition in 1495. This Aristotelian text of the Prussian Academy appeared at a very opportune moment for Barthélemy. The text was complete in 1831; Barthélemy began his French version in 1832, and the first volumes issued from the press in 1837. The first work translated was the *Politics* (2 vols.). It was dedicated to Littré, *père*, who had been a generous patron of his studies, and had, when he was Minister of Finance in 1825, taken the young Barthélemy into his bureau as clerk.

This was the beginning of Barthélemy's public career. From 1827 to 1830 he worked on the *Globe* as a leading contributor of political articles. He was the last survivor of that famous group of journalists who signed the protest — the remonstrance of July, 1830 — against the ordinances of Charles X. After the revolution of 1830 he established, along with Rodde and Couchois-Lemaire, the *Bons Sens*, and was a vigorous and voluminous contributor to other journals, espousing the cause of the Liberal party in the *Constitutionnel* and *National*. Towards the close of 1833 he abandoned journalism and public life, in order to devote himself entirely to science and philosophy. In 1834 he became tutor and examiner in French literature in the Polytechnic School. In 1837 his treatise on the *Logic of Aristotle* was crowned by the Institute. In 1838 he was appointed to the chair of Greek and Roman Philosophy in the Collége de France, and in the following year was elected a member of the Academy of Moral and Political Sciences. He was not yet thirty-five years of age when he had acquired the reputation of being one of the most learned men in France. Two years later he became chief of Cousin's cabinet, in the Ministry of Public Instruction. After this brief interruption in his academic studies he retired to his investigations in the history of philosophy, until he was again called away from them into the political arena by the revolution of 1848, when he was elected to the Constituent Assembly. He became one of the chief figures in the republican *tiers-parti*. He approved the measures taken against the Socialists, but refused his support to General Cavaignac, making himself

the spokesman of the Dictator's opponents. After the *coup d'état* of December 2, 1852 (a year previously he had been banished to Mazas), he refused the oath of allegiance to Napoleon III, and resigned his chair in the Collége de France. He was, however, reinstated in 1862. In this interval he interested himself in the plan for building the Suez canal, and was associated with de Lesseps in that enterprise, supporting it with important articles in the *Journal des Débats*. He further used his long residence in Egypt for the prosecution of his Oriental studies (he had already published his work on the Sankhya and on the Alexandrian school). In 1867 Cousin died at Cannes, and made Barthélemy his literary executor (as did also Thiers later) and curator of his great private library, which he bequeathed to the Sorbonne. At the general election in 1869 Barthélemy was returned to the *Corps Legislatif* from the first division of Seine-et-Oise. From the same department he was sent as representative to the National Assembly at Bordeaux during the armistice in the siege of the capital. Here he was one of the most zealous and prominent supporters of his old friend M. Thiers, during whose presidency he was secretary-general. Barthélemy also served on the committee of fifteen appointed to conduct negotiations for peace with Prussia. On December 10, 1875, he was elected a life senator, and took his seat with the Republican minority. During the presidency of M. Ferry (1880–81) he had the portfolio of Foreign Affairs, and although at that time an old man, he performed the arduous duties of this office with extraordinary skill and success. In his secretaryship, France made the valuable acquisition of Tunis, which was, in the main, brought about by him.

During the whole of this long and busy career, filled with academic and political labors, Aristotle continued to be his *grande passion*. After his retirement from public service in 1881, no less than eleven volumes on Aristotle (exclusive of other writings) issued from the press, exhibiting in this grand veteran a prodigious strength and activity. Barthélemy created no system of philosophy, nor did he profess adherence to any historical system. He was in his philosophic thought an eclectic, dominated by ideas similar to those of Victor Cousin (before the latter reverted from Hegelianism to the Scottish school), with, however, a stronger religious bias than his senior. He was a historian of philosophy, more particularly an interpreter of Greek thought, rather than a systematic and constructive producer. His service especially to Aristotle is inestimable. His elaborate introductions and commentaries are masterpieces of interpretative writing. His translation is freer than many scholars would like to have it, but in dealing with Aristotle we do not have a good text and a finished literary product, as in the case of Plato; and no scholar, however great his skill, will ever be able to make a close translation of Aristotle that will be intelligible and readable. Barthélemy's work will doubtless remain for many generations the standard Aristotle in France, and no French scholar in after years will be able to think of the immortal philosopher of the Lyceum without

associating with his name that of Barthélemy-Saint-Hilaire. In 1892 he completed his version, consisting of thirty-three volumes, and at the same time he presented to the *Bibliothèque nationale* his unrivalled collection of editions of Aristotle and commentaries in many languages. No scholar in this century, excepting Trendelenburg, understood Aristotle so well, or did so much to enable others to know him. The following bibliography will exhibit the range and progress of his literary and scientific career:

1832. Psychologie criminelle.
1835. Mémoire sur l'ordre des livres de la Politique d'Aristote.
1837. Politique d'Aristote (2 vols.).
1838. De la logique d'Aristote (2 vols., crowned in 1837 by the Institute).
1839. Mémoire sur la philosophie sanscrite.
1839–44. Logique d'Aristote (4 vols.).
1845. De l'école d'Alexandrie.
1846. Psychologie d'Aristote, Traité de l'âme.
1847. Psychologie d'Aristote, Opuscules.
1849. De la vraie démocratie.
1850. Lois organiques.
1851–52. Mémoire sur le Sankhya (read in ten sessions of the Academy between April 5, 1851, and February 28, 1852).
1854. Des Védas.
1855. Du Bouddhisme.
1856. Lettres sur l'Egypte.
1856. Morale d'Aristote (3 vols.).
1858. Poétique d'Aristote.
1858. La Bouddha et sa religion.
1862. Physique d'Aristote.
1863. Météorologie d'Aristote.
1865. Mahomet et le Coran.
1865. Traité du ciel d'Aristote.
1866. Traité de la production et de la destruction des choses d'Aristote.
1866. Philosophie des deux Ampères.
1869. L'Iliade d'Homère (2 vols.).
1870. Rhétorique d'Aristote (2 vols.).
1874. A la démocratie française.
1876. Pensées de Marc-Aurèle.
1879. Métaphysique d'Aristote (3 vols.).
1879. De la Métaphysique.
1880. Le Christianisme et le Bouddhisme.
1883. Histoire des animaux d'Aristote (3 vols.).
1885. Traités des parties des animaux d'Aristote (2 vols.).
1887. Traité de la génération des animaux d'Aristote (2 vols.).
1887. L'Inde anglaise.
1889. La philosophie dans ses rapports avec les sciences et la religion.
1890. Étude sur François Bacon.
1891. Les problèmes d'Aristote (2 vols.).
1892. Traduction générale d'Aristote, Table alphabétique des matières (2 vols.).
1895. M. Victor Cousin et sa correspondance (3 vols.).

The foregoing list does not include certain memoirs to be found in the proceedings of the Academy of Moral and Political Sciences.

W. A. H.

Professor Vaihinger, the author of the well-known *Commentar zu Kants Kritik der reinen Vernunft*, has undertaken the editorship of a journal especially devoted to Kant, and to be entitled *Kant-Studien*. In this work he will have the coöperation of E. Adickes, É. Boutroux, Edward Caird, G. Cantoni, J. E. Creighton, W. Dilthey, B. Erdmann, K. Fischer, M. Heinze, R. Reicke, A. Riehl, W. Windelband, and others interested in the subject. *Kant-Studien* will contain original articles, furnishing both exposition and criticism of Kant's philosophy, and dealing with the psychological and historical conditions under which it arose, and with its relations to previous systems as well as to those which immediately succeeded it. The new journal will also contain thorough and exhaustive critical reviews, as well as brief notices of new books by the authors themselves. There is also to be a section devoted to the exegesis and criticism of the Kantian text; and each year an account will be given of the literature of the subject appearing in the various European countries and in America. Another important feature will be a complete *Litteraturbericht*, furnishing brief notes on all books, dissertations, magazine articles, etc., which deal either directly or indirectly with the Kantian philosophy.

Professor Campbell Fraser is continuing his course of Gifford Lectures, at Edinburgh University, on the "Philosophy of Theism." At St. Andrews, Professor Lewis Campbell, as Gifford Lecturer, is treating of "The Religious Conceptions of the Greeks"; while at Aberdeen, on the same foundation, Dr. James Ward is lecturing on "Naturalism and Agnosticism."

Professor J. Gibson, formerly of the University of St. Andrews, has been elected to the Professorship of Philosophy in Bangor College, Wales.

W. G. Smith, M.A. (Edinburgh), Ph.D. (Leipzig), has been appointed Professor of Psychology in Smith College.

Johns Hopkins University has recently established a Lectureship in Experimental Psychology, and has called Dr. Herbert Nichols to take charge of the work.

The Russian magazine, *Voprosy Filosofii i Psychologii*, for November, 1895, contains the following articles: "An Ethical Tractate by Lorenzo Valla," by M. Korelin; "God as Felt and as Known," by A. Kozlov; "The Foundations of Experimental Psychology," by N. Grote; "The Distinction between the Phenomenal and the Real as it appears in Consciousness," by L. Lopatine; "The Unconditional Principle of Morality," by V. Soloviev; "An Attempt at a Scientific Reconciliation of Moral Contradictions," by L. Obolensky; "In Memory of Hugo Grotius," by V. Goltsev; "Iv. G. Shad," by Th. Zelenogorskii; "On Kozlov's Analysis of Tolstoi's *Master and Man*," by M. A. B—ch.